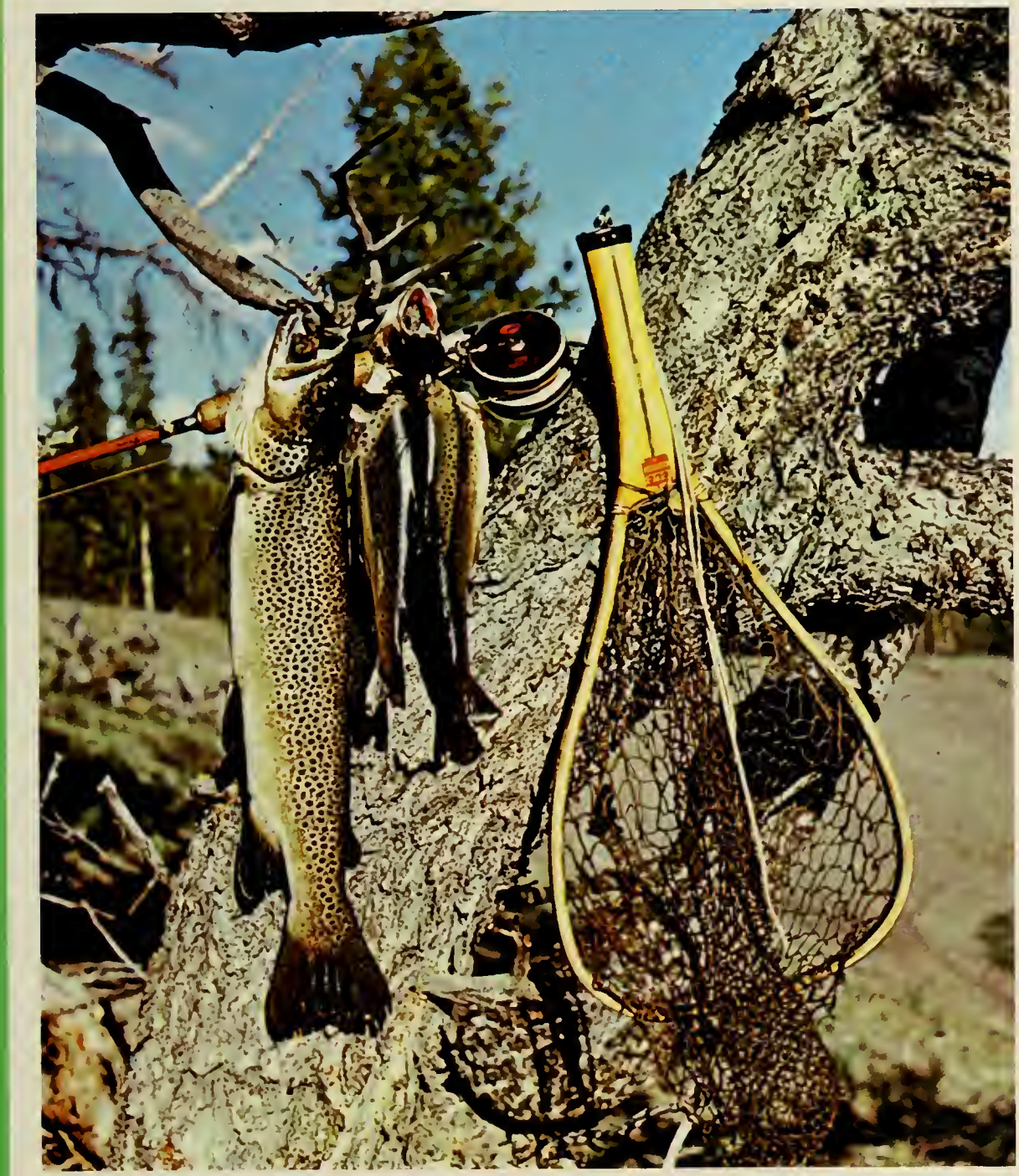
MONTANA OUTDOORS



MAY/JUNE 1971

MONTANA OUTDOORS

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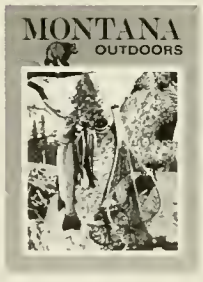

THE COVER

Brown trout like the ones shown on the front cover can be caught in many Montana streams and lakes. Montana's fishing access sites increase the angler's chances of a nice catch by providing free access to many of the state's finest fishing waters. These trout were caught and photographed by Roger Fliger. The photo on the back cover is from the camera of Vern Campbell, who also authored the story on page 7. The article is the third in a series dealing with Montana's rare and endangered wildlife.

Vol. 2, No. 3 **May/June 1971**

ARTCRAFT PRINTERS BOZEMAN, MONTANA

A LIVABLE ENVIRONMENT FOR WILDLIFE IS A QUALITY ENVIRONMENT FOR MAN

STATE OF MONTANA
Forrest H. Anderson
Governor

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THE OFFICIAL PUBLICATION OF THE MONTANA FISH AND GAME DEPARTMENT

dear F&G

WELCOME IDEA

In November of 1970 Mr. John Warner wrote a letter to the *Great Falls Tribune*, explaining that on fishing trips along the Missouri he picks up beer cans and cartons left by others and hauls them home to his own garbage can. He then wrote to the department:

Because of the many favorable comments I have received, I pass the idea along to your department with an added idea. As usual this past weekend, I was out on the Missouri and came home with a catch of trout and lots of empty cans and cartons. I find if I carry a large plastic bag in my creel it is much easier to pick up the cans on my way back to my car. My total time fishing was six hours. I am sure I spent no more than 10-15 minutes cleaning up the litter. This may all sound like a lot of work, but believe me it isn't. I even get a feeling of personal satisfaction knowing I'm adding something to the betterment of those who follow me.

I'm absolutely convinced that if enough fishermen made it a part of their fishing, we could change the whole scene in just a very, very short time.

John E. Warner
Great Falls

● *It was heartening to receive a letter such as yours, which pointed out that those people who really want to help with the cleanup of our environment can do so. Certainly, your idea has merit. I am referring your letter to my staff in hopes that they may be able to come up with some concrete suggestions which may be able to put some of your ideas into actuality.*

Frank H. Dunkle

CATCHABLE FISH STAMP

It was with great interest that I read your article, "Who Pays For What?" (M.O. March/April, 1971). As you know, I introduced a bill to provide for a catchable fish stamp. I found much opposition to this, mainly because there was so much misunderstanding.

I am sure your article will help to clear up a lot of misunderstanding. It is inevitable that someday we are going to have to have the catchable fish stamp in Montana in order to have an equitable fish program.

Neil J. Lynch
State Senator, D-Butte

WHO NEEDS THE PEREGRINE?

The article about the peregrine falcon (M.O. March/April, 1971) repeats the fears expressed in *National Wildlife* and other publications relative to extinction of this bird of prey. But from the listed food items of the bird it seems that its value to mankind and to the environment is rather questionable.

Quotes from the article:

"Falcons along the coast take gulls as their principal food." The gulls are scavengers; they keep the beaches clean; they perform a valuable service. We need the gulls.

"Falcons in inland waterways depend on waterfowl for food." Certainly no one would trade any of our fine game birds for the falcon.

"Research shows the domestic pigeon to be a favorite prey of the peregrine falcon." Who wants to raise pigeons just to feed the falcons?

"The peregrine also preys on doves and larks." Once more—who would make a trade? One meadowlark is priceless.

"The peregrine preys on a small number of mammals which are considered to be insignificant in their diets." There you have it. The peregrine doesn't even earn his keep by consuming a few rodent pests.

G. W. Frisbie
Troy, MT. 59935

WORTH STRUTTING ABOUT

You can be as proud of MONTANA OUTDOORS as the strutting male sage grouse on the front cover of your March/April issue.

Congratulations on a magazine which has captured Montana's majesty.

In the eight western states in which I travel, and of those magazines we receive from the states, yours ranks right at the top.

As a former Montanan I take pride in your accomplishments too!

Nick Mariana
Conservation - Information - Education Coordinator
BSFW
Portland

FILMS AVAILABLE

We were wondering if you would send us some information on where we could get a film on Montana Outdoors to show at a P.T.C. meeting?

Donald G. Peters
Anaconda

● *The department's Information and Education Division maintains a film library for use by clubs and schools. You can order these films and obtain a free film catalog by writing to the Film Center, Fish and Game Dept., Helena, Mt.* 59601.

Loch Leven Fishing Access Site provides free access and camping along the east shore of the Yellowstone River 14 miles south of Livingston. Recreational development began on the 50-acre site after its purchase in 1967 with camping, picnicking, sanitary, boat docking and drinking water facilities due for completion by spring of 1971. (F&G photo by Robert Rothweiler)

A New Approach To Fishing

by Dick Ellis

Since its origin, the Montana Fish and Game Department has attempted to provide quality fishing through a program of progressive fish management, law enforcement, stream preservation and habitat improvement. In recent years, one aspect of the fishery improvement program is becoming increasingly important — that of acquiring and developing property fronting quality fishing streams and lakes.

The accelerating loss of shoreline to private development and the increasing confrontation with NO TRESPASSING and KEEP OFF signs have emphasized the need to preserve portions of our shoreline for public ownership. The recreationist

needs places where he can picnic, fish, launch a boat or just enjoy the out-of-doors. The department's fishing access site program is designed to fulfill this need.

At first the program was designed to provide only access. Small tracts of land were purchased with money from the sale of fishing licenses, and very little development beyond boundary fencing was attempted. These sites were very popular and received an unexpected amount of use by campers and picnickers as well as fishermen.

The program had to be expanded to provide more and larger sites, to develop sanitary facilities, roads, parking areas and boat launching ramps. It was not until 1965, however, that such an expanded program became possible. At that time, the governor of Montana named the Fish and Game Department as the state outdoor recreation agency. The establishment of a Recreation and Parks Division soon followed.

The new division's first responsibility was to prepare a state-wide outdoor recreation plan. Upon approval by the Bureau of Outdoor Recreation, the plan made the state eligible for federal matching funds for the acquisition and development of outdoor recreation areas. This made it possible to greatly expand the fishing access site program.

Since 1965, the department has actively sought to acquire suitable river and lake frontages throughout the state. Montana residents and visitors now enjoy more than 100 sites varying in size from just a few acres touching the water to larger areas including several miles of shoreline.

As the program has grown over the years, so has the cost, especially in the area of land acquisition. With increasing demands from summer home developers and private outdoor recreation enterprises, the department must compete for increasingly expensive real estate.

Acquisition is only the first step in a chain of events that leads to the finished access site. A survey is often necessary to determine exact boundaries of the purchased land. Next, a development plan must be prepared which considers terrain, size of the area and expected degree of use. Actual construction on the site follows as soon as possible, depending upon available funds and priorities of the overall program.

When the project gets underway, specifications are prepared and bids are let on major construction items such as roads, parking areas and wells. Light construction such as installation of latrines, fireplaces, garbage facilities, picnic tables and signs is done by department construction crews based in Helena, Billings and Kalispell.

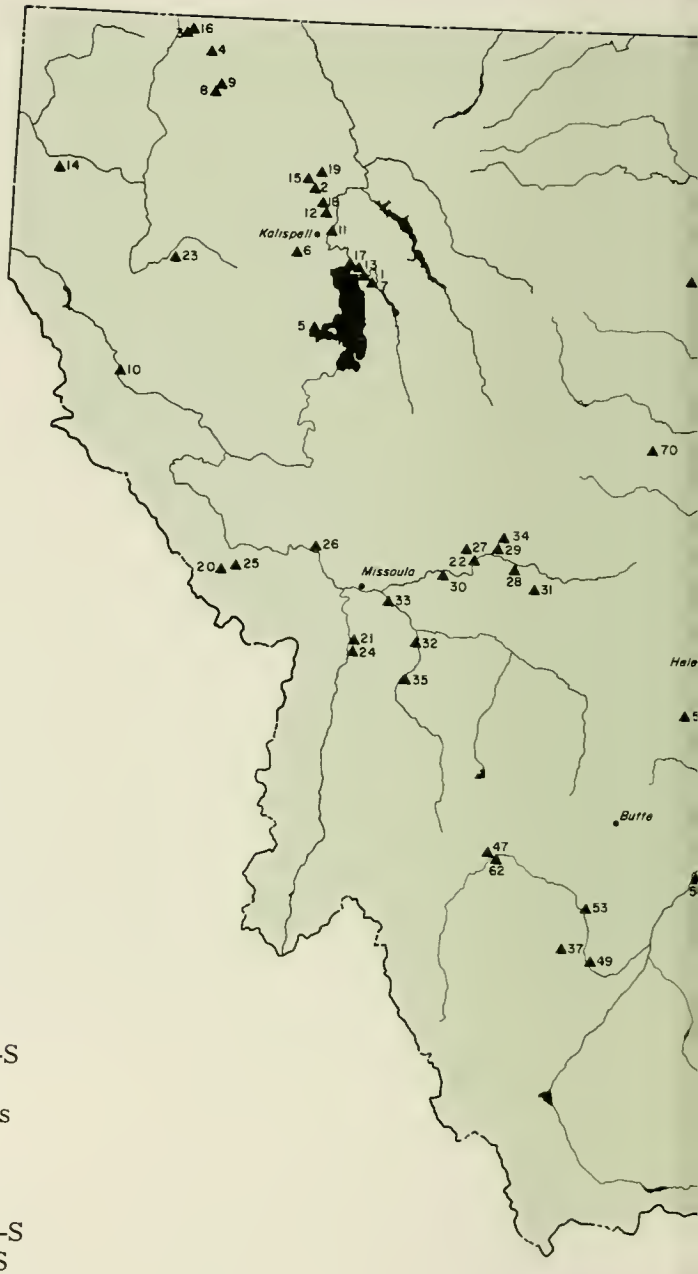
In the early stages of the fishing access program, it became apparent that the department's responsibility did not end with acquisition and development. As the public began to use the areas, a program of continuing maintenance was put into effect. Seasonal caretakers were hired for the very important tasks of emptying garbage, maintaining latrines, picking up litter and keeping each area in good condition.

This day-to-day maintenance which personally involves everyone who visits the site is one of the most vital aspects of the entire program — a program of increasing importance to the outdoor recreationist in Montana.

Located on the Stillwater River 15 miles south of Absarokee, Castle Rock Fishing Access site offers free access to one-half mile of river frontage and more than 1,000 acres of public land. Since its purchase in 1965, an entrance road, sanitary units, parking areas and drinking water facilities have been added to the site. (F&G photo by Ron Holiday)

EDITOR'S NOTE—Richard I. Ellis, 33, completed his undergraduate work in wildlife technology at the University of Montana, Missoula, in 1963. Two years later he received a Master of Science degree in the same field. He has served with the department's Game Management and Information and Education Divisions, and is now District Manager for the Recreation and Parks Division in Helena. In his spare time he draws and paints western and wildlife subjects.

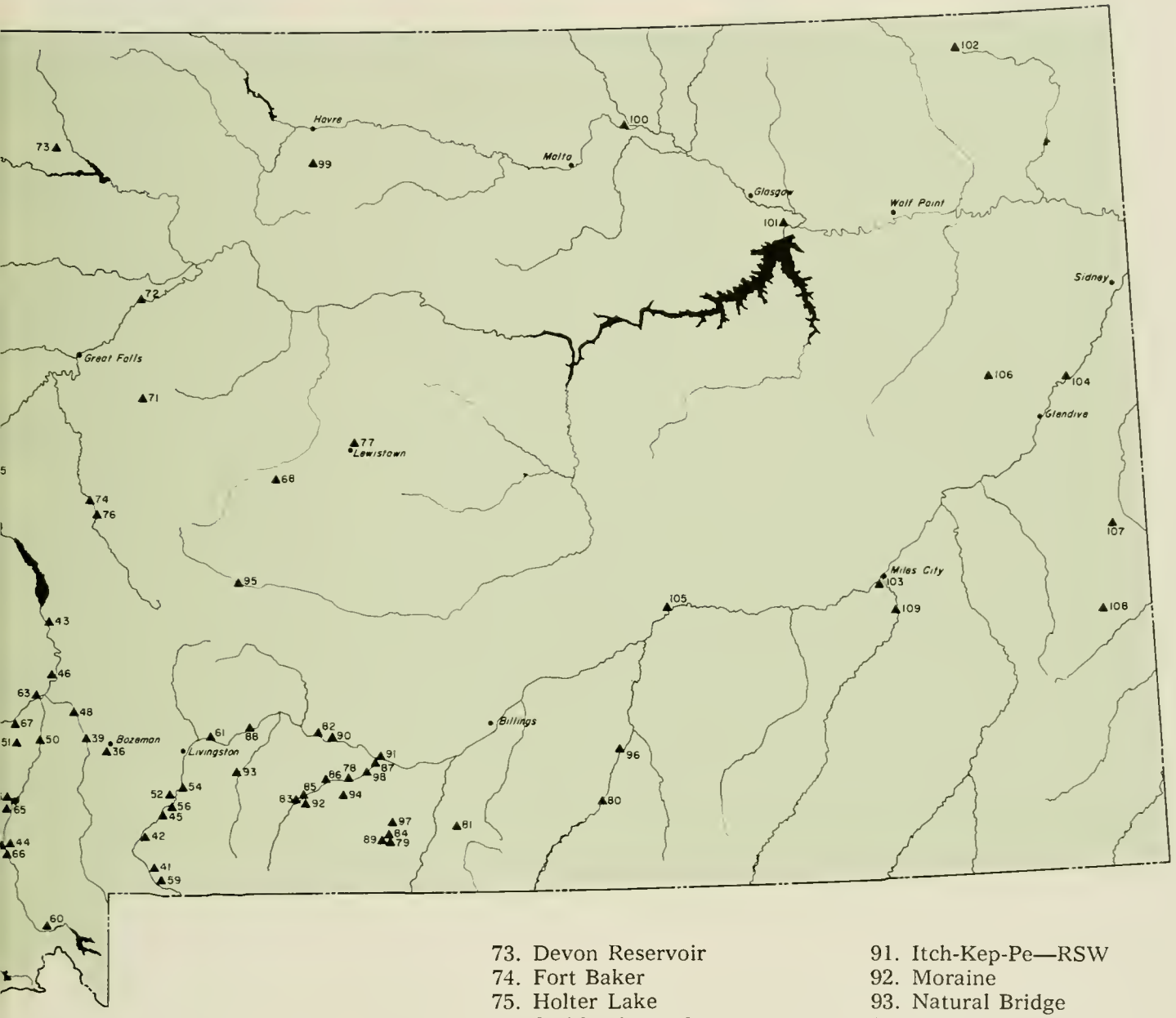
Caretakers and maintenance men fill an essential niche in the Recreation and Parks program. Without them the usefulness of fishing access sites would soon cease. (F&G photo by Dick Ellis.)



MONTANA'S FISHING ACCESS SITES

All of these sites are open to the public and campers and picnickers are welcome. Developments other than access roads and garbage facilities are keyed as follows: R—Boat Ramp; S—Sanitary Facilities; W—Drinking Water.

1. Bigfork—SW
2. Blanchard Lake—RS
3. Carpenter Lake—S
4. Glen Lake—S
5. Juniper Beach
6. Kila Lake—S
7. Loon Lake I
8. Loon Lake II
9. Marl Lake
10. Noxon Rapids—RS
11. Old Steel Bridge
12. Pressentine Bar—S
13. River's End
14. Savage Lake
15. Skyles Lake
16. Sophie Lake—S
17. Sportsman's Bridge—S
18. Whitefish River
19. Whitefish Satellite—S
20. Big Pine—S
21. Chief Looking Glass—RSW
22. Clearwater Crossing—S
23. Crystal Lake
24. Florence Bridge—S
25. Forks—S
26. Frenchtown Ponds
27. Harper Lake—S
28. Harry Morgan
29. Monture—S
30. Ninemile Prairie—S
31. River Junction—S
32. Tamarack Creek—S
33. Turah—RSW
34. Upsata Lake—S
35. Welcome Creek—S
36. Bozeman Ponds—SW
37. Browne's Lake—RS
38. Burnt Tree Hole—S
39. Cameron Bridge—S
40. Cardwell—S
41. Corwin Springs
42. Dailey Lake—RSW
43. Deepdale—RS
44. Eight Mile Ford—S
45. Emigrant—S
46. Fairweather
47. Fishtrap Creek
48. Four Corners—S
49. Glen—S
50. Greycliff—SW
51. Harrison Lake—RS
52. Loch Leven—RSW
53. Maidenrock—SW
54. Mallard's Rest—SW
55. Meadow Lake—S
56. Paradise—S
57. Park Lake
58. Parrot Castle—S
59. Queen of the Waters



60. Reynolds' Pass
61. Sheep Mountain—S
62. Sportsmen's Park—S
63. Three Forks Gravel Pits
64. Tizer Lakes
65. Valley Garden—S
66. Varney Bridge—S
67. Williams' Bridge
68. Ackley Lake
69. Arod Lakes—S
70. Bean Lake—RSW
71. Belt Creek
72. Carter Ferry
73. Devon Reservoir
74. Fort Baker
75. Holter Lake
76. Smith River—S
77. Upper & Lower Carter's Pond—S
78. Absaroka—S
79. Beaver Lodge
80. Bighorn
81. Bluewater—S
82. Bratten
83. Buffalo Jump—S
84. Bull Springs—S
85. Castle Rock—SW
86. Cliff Swallow—S
87. Fireman's Point—S
88. Grey Bear—S
89. Horsethief Station—S
90. Indian Fort—RSW
91. Itch-Kep-Pe—RSW
92. Moraine
93. Natural Bridge
94. Rosebud Isle—S
95. Selkirk—SW
96. Two Leggins
97. Water Birch—S
98. White Bird—SW
99. Bear Paw Reservoir—SW
100. Cole Ponds—S
101. Fort Peck Dredge Cuts—RS
102. Whitetail Reservoir—S
103. Branum Lake—S
104. Intake Dam—RS
105. Isaac Homestead
106. Johnson Reservoir
107. Rush Hall Reservoir
108. Sportsman's Pond
109. Twelve-Mile Dam—S

ELK

(F&G photo by Gus Wolfe)

"Elk," a half-hour color film for general distribution and television, is available without charge from the Montana Fish and Game Department.

"Elk" deals with the history and management of Montana's most sought-after big game animal. The movie was produced by the Information and Education Division and filmed by department personnel over a several-year period. It shows the requirements for a healthy, widespread elk population and explains techniques used to maintain Montana herds. The film discusses the elk's future in the face of modern pressures and shows how hunting under present-day regulations is a key factor in high herd production.

Although elk herds inhabit all mountainous and some prairie sections of the state, their presence or absence in some places has been controversial for a century. "Elk" illustrates the issues involved in the management of Montana's elk herds.

"Elk" is the latest in a continuing series of department films produced to satisfy public demand to know more about our priceless resources and outdoor heritage.

The Westslope Cutthroat

EXTINCTION

by Vern R. Campbell

The westslope cutthroat trout, a game species that existed in Montana long before the first white man, now ironically may become one of the state's first environmental casualties. Only a remnant persists of the once vast numbers of westslope that filled Montana's western streams and lakes.

One of the few game fish species native to the state, the Montana westslope cutthroat trout (Salmo clarki) is so named because its range is confined to the watershed of the west slopes of the Continental Divide. Its numbers have dwindled to the point that it now is on the endangered species list of the Bureau of Sport Fisheries and Wildlife.

Many factors have contributed to the westslope's population decline. Certainly the most significant factor is the destruction of the westslope's natural habitat by agricultural practices, road building, poor logging methods and dam building. Another major cause of the decline (but of lesser importance than habitat destruction) is the introduction of exotic fish such as brook trout, rainbow trout, perch, sunfish and bass into the westslope's habitat.

Comparatively little has been done to perpetuate this species. In a few waters, particularly in the Flathead drainage above Flathead Lake, the westslope is the exclusive or predominant trout species. Elsewhere it is generally limited to small tributary streams containing populations that mature at five and six inches in length. A study made in 1957 and 1958 by Delano A. Hanzel, F & G special project biologist at Kalispell, revealed the extent of the westslope cutthroat trout population in the major main stem drainages west of the Continental Divide. In his master's thesis published in the **Proceedings of the Montana Academy of Science,** Hanzel reported that westslopes were recorded in 194 streams and 48 lakes, but were predominant in only 76 streams and 27 lakes.

Tagged with localized names such as "flats" and "bluebacks," the westslope's only similarity to its eastern cousin, the Yellowstone cutthroat, is the familiar red throat slash. Westslopes lack the yellowish-brown hue common to eastern species, and the spotting is more irregular in shape. Most spotting occurs above the lateral line and behind the dorsal fin. Generally the stomach area is devoid of spots.

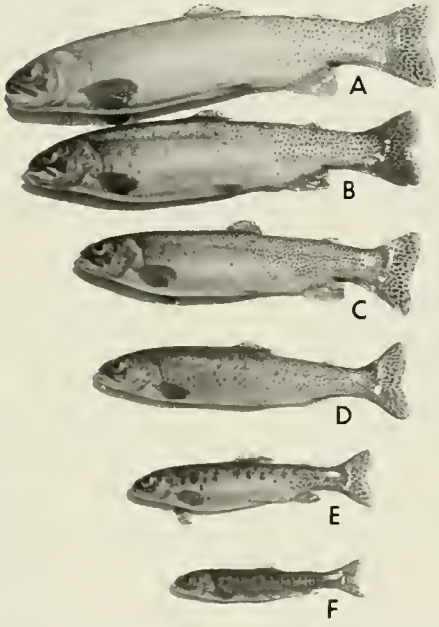
The westslope still turns up in the angler's creel, but without help the species will not survive for long outside of the most remote headwater streams. **The greatest need of the dwindling westslope population is the immediate preservation and restoration of as much natural habitat as possible.** Although several other forces work to lower westslope numbers, they seem small when compared to the tremendous detrimental effect of habitat degradation. Other management practices would be futile without a solid foundation consisting of a good productive habitat.

The introduction of exotic species into waters where westslope cutthroat are the predominant species also has adverse affects. The rainbow trout (Salmo gairdneri) is particularly dangerous to the westslope because it will hybridize with the westslope. Pure cutthroat strains are then lost through what may be called genetic pollution.

After as much habitat as possible has been preserved and improved, and the introduction of exotic species prevented, research will be the key to the westslope's future. Many management practices can be developed and refined to build the westslope population up to its former level.

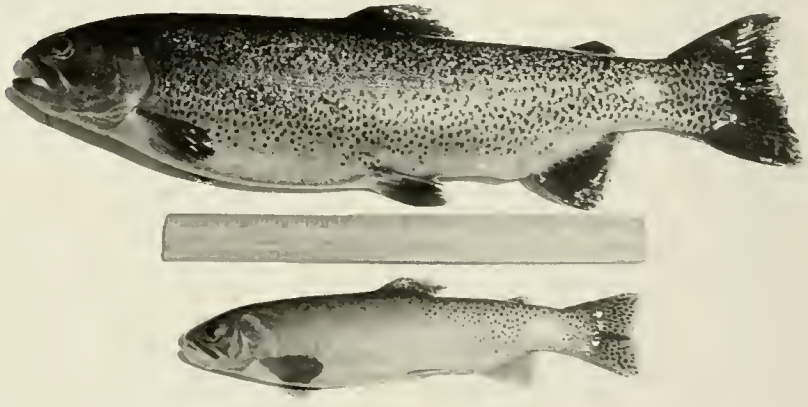
The development of a pure hatchery stock will be a necessity in the later stages of the preservation of the westslope cutthroat. Hatchery fish can then be reintroduced into areas where the habitat has been restored. Unfortunately the brood stock program has not been very successful, and a number of problems remain to be solved.

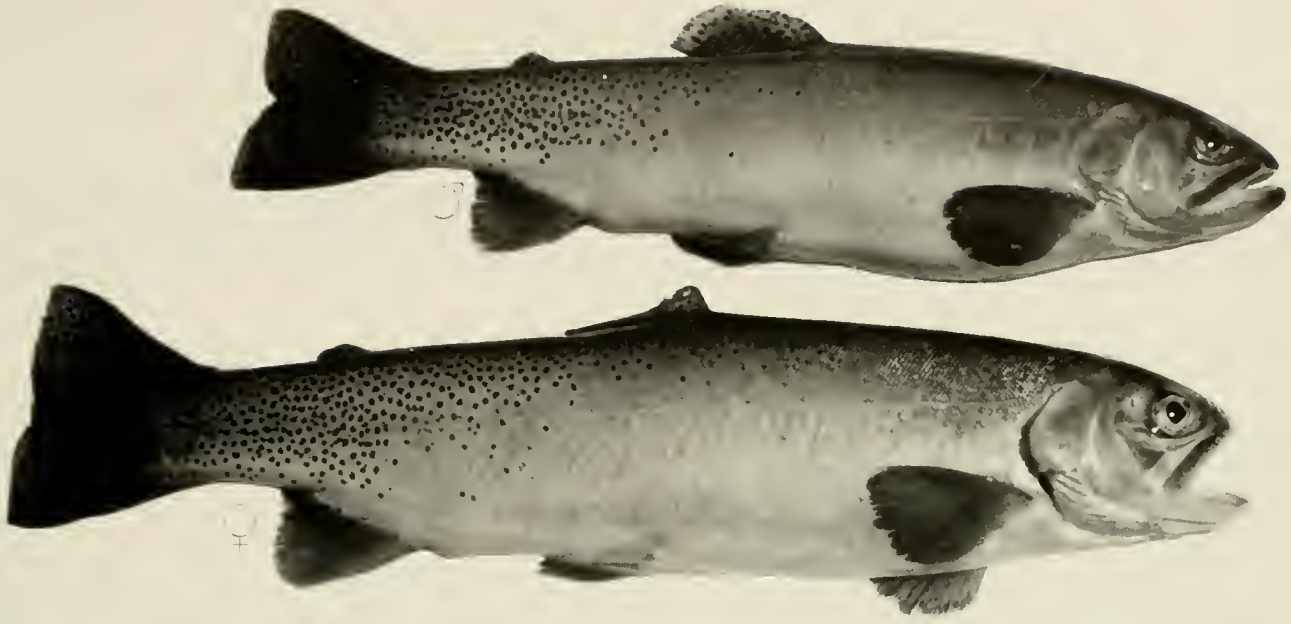
EDITOR'S NOTE—Vern R. Campbell, 52, is superintendent of the Flathead Lake Salmon Hatchery at Somers and former superintendent of the Jocko River Trout Hatchery, Arlee. He has also worked at hatcheries in Anaconda, Rock Creek, Ovando, Libby and Bridger. In May he will have completed 35 years of service with the department. His work centers around spawning activities, improvement of brood stocks through selective breeding and the improvement of hatchery techniques.



One of the major disappointments in the management of the westslope cutthroat is the variation in size within a certain age group. The six fish above (all age 34 months) vary from 4.5 to 11.8 inches. The number of eggs laid by spawning females also varies within a particular age group. A, B and C averaged 474 eggs per female, and D, E and F averaged 136.2 eggs per female. (F&G photo by Vern Campbell)

These two fish are the same age (34 months). The rainbow (top) has adjusted to hatchery life and has been very responsive to selective breeding and other management practices. On the other hand, the westslope cutthroat (bottom) has been unresponsive to most efforts by fish managers to improve the strain. In addition to size and weight variance, the egg-laying capacity of these two fish differs by a substantial margin—an average of 2,500 eggs from the rainbow and 474 from the westslope. (F&G photo by Vern Campbell)





MONTANA WESTSLOPE CUTTHROAT TROUT

STATUS: Endangered

CLASSIFICATION: Class — Osteichtyes
Order — Clupeiformes
Family — Salmoidae
Genus — Salmo
Species — clarki

DISTINGUISHING CHARACTERISTICS: Typical cutthroat slashes under jaw. Coloration generally lighter and more silvery than Yellowstone cutthroat. Spots are usually restricted to an area above the lateral line, with a few scattered below. Spots more numerous on the posterior part of the body. (See back cover.)

FORMER RANGE: The west slope of the Rocky Mountains in Montana, Idaho and Wyoming. Also found in a few small tributaries on the east slope in Montana.

PRESENT RANGE: Flathead River drainage, Montana.

REASONS FOR DECLINE: Habitat deterioration by sediment and low water. The blocking of spawning runs by dams and culverts. Competition with exotic species of trout.

PROTECTIVE MEASURES: Habitat protection and improvement. Promotion of sound watershed management to reduce sedimentation. Opposition to dams. Establishment of a management policy to prevent introduction of exotic species into native cutthroat habitat. Development of hatchery stocks. An expanded research program.

Future plans for the westslope brood stock program include use of a natural lake with an inlet stream suitable for a proper fish trap installation. This lake would be chemically treated to rid it of trash fish and competitive species. Breeding stock would then be introduced, and would be managed in the same way as hatchery - retained stocks. Restricted fishing could be imposed to insure adequate numbers of spawning fish.

Although the brood stock program and other management practices will surely play important roles in the final preservation of the westslope, the protection and restoration of the habitat is of immediate importance.

Endangered is a cruel tag to place on the Montana westslope cutthroat trout—especially when extinction could be the next step.

Make it a Safe Trip

by Joyce MacDuffie

Two laws are involved in boating safety in Montana — the Montana Water Safety Law and, even more important, the law of common sense.

Under the Montana Water Safety Law, any boat used on Montana waters must have certain equipment in accordance with the size and type of boat. For example, both federal and state laws require that one Coast Guard-approved lifesaving device be included for each person aboard. The law of common sense suggests that these LIFE PRESERVERS be worn, not stowed away in some inaccessible part of the craft. All too often when someone drowns as the result of a boating accident, the report will bear this grim note, "Life preservers aboard but not in use."

RUNNING LIGHTS are required on all boats operated on Montana waters during hours of darkness. The type of lights used depends upon the type and size of the craft. Even sailboats and rowboats are required to carry at least a lantern showing a white light that can be displayed in time to prevent collision. Motorboats less than 26 feet long must have a white light aft that can be seen all around the horizon and a combined lantern in the forepart of the vessel showing green to starboard and red to port. Motorboats over 26 feet in length must, during hours of darkness, display the white light aft and green light on the starboard side and a red light on the port side. In addition, they must have another white light in the forepart of the vessel as near the middle of the boat as practicable.

Under both Coast Guard regulations and Montana law, any motorboat over 26 feet long must carry Coast Guard-approved FIRE EXTINGUISHERS. The law does not require boats under 26 feet to be equipped with fire extinguishers, providing such boats are of completely open construction. If, however, the boat has any closed compartments, or if it is carrying passengers for hire, it must be equipped with at least one Coast Guard-approved fire extinguisher. Of course, the law of common sense requires *every* motorboat to be equipped with a fire extinguisher.

Any motorboat which carries a flammable or toxic fluid in an enclosure must have an adequate VENTILATING SYSTEM. Even if the enclosure consists only of a compartment in which an extra gas can is stowed, the door must be opened or some other means of ventilation used so that gas fumes will not accumulate in the compartment. Inboard motorboats must also be equipped (usu-

EDITOR'S NOTE—Joyce MacDuffie retired in April from her post as Supervisor of Boater & Hunter Safety for the department's Information and Education Division. She was the only woman in the United States to serve as director of a state hunter safety program.

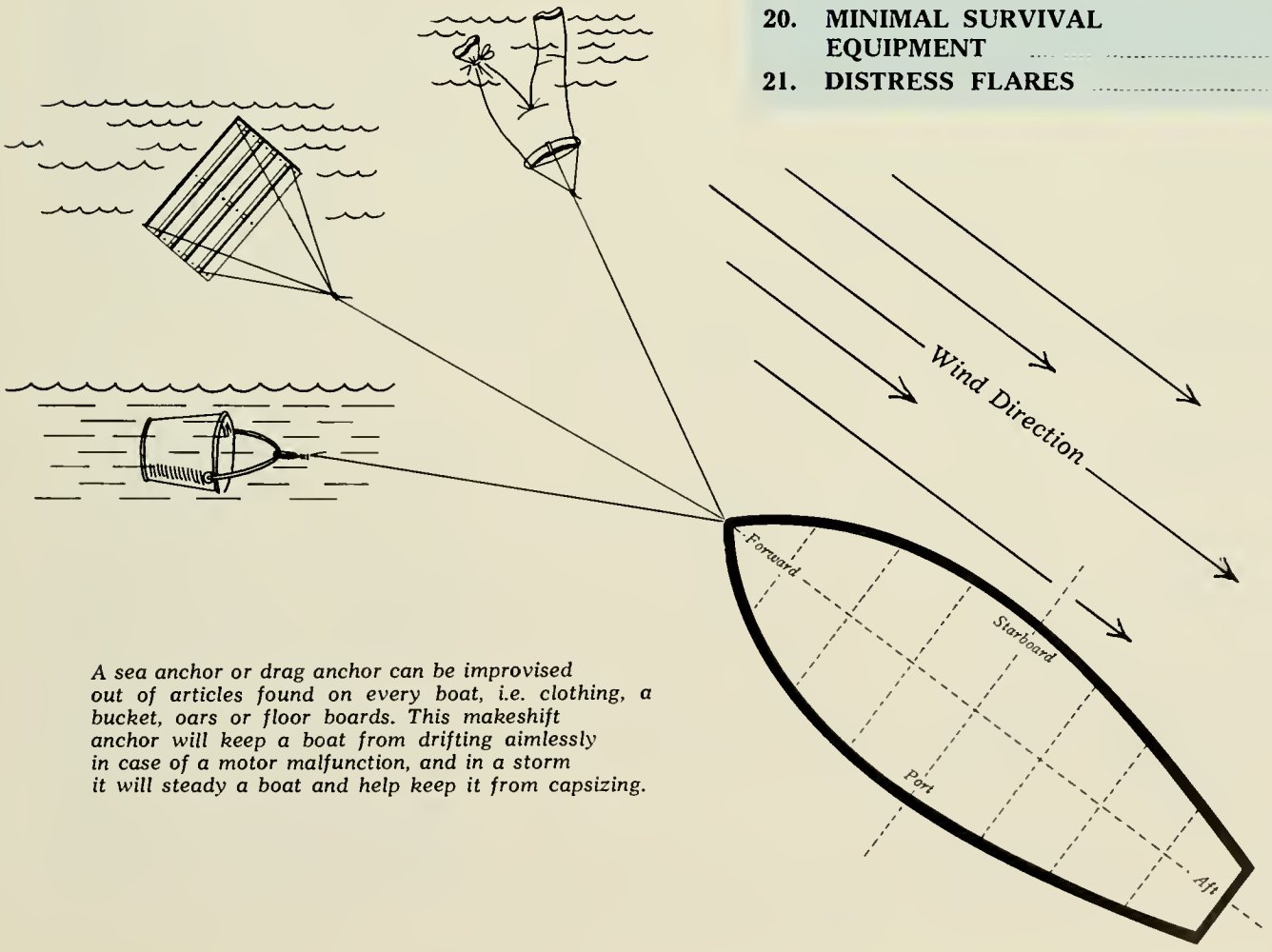
ally by the manufacturer) with a FLAME ARRESTOR or BACKFIRE TRAP.

NOISE-MAKERS (not the party type) are required by law to be aboard any motorboat over 16 feet in length. For boats over 16 feet in length but under 26 feet, any mouth-, hand- or power-operated device will suffice, provided it can produce a blast of two seconds or more which is audible for at least one-half mile. Boats over 26 feet in length must carry a hand- or power-operated device that is audible for at least one mile; boats over 40 feet in length must have a power-operated noise-maker that is audible for at least one mile. Boats longer than 26 feet must also have a FOG BELL.

In addition to the equipment already listed, the law of common sense dictates that every boater should *always* carry a PADDLE or an OAR in case of a motor malfunction. A paddle may not provide as much power as a motor, but it surely beats using just hands. A manual PUMP or a BAILER — or at the very least a bucket or an old coffee can — should be aboard every boat. Even a new boat can spring a leak, and a hat

CHECKLIST FOR BOATING SAFETY

1. LIFE PRESERVERS ☐
2. RUNNING LIGHTS ☐
3. FIRE EXTINGUISHERS ☐
4. VENTILATING SYSTEM ☐
5. NOISE MAKER ☐
6. PADDLE OR OAR ☐
7. PUMP OR BAILER ☐
8. ANCHOR ☐
9. ANCHOR LINE ☐
10. ROPE ☐
11. TOOLS ☐
12. FLASHLIGHT ☐
13. EXTRA BATTERIES ☐
14. FIRST AID KIT ☐
15. EXTRA FUEL ☐
16. EXTRA PARTS ☐
17. EXTRA CLOTHING ☐
18. EXTRA FOOD ☐
19. WATERPROOF MATCHES ☐
20. MINIMAL SURVIVAL EQUIPMENT ☐
21. DISTRESS FLARES ☐



A sea anchor or drag anchor can be improvised out of articles found on every boat, i.e. clothing, a bucket, oars or floor boards. This makeshift anchor will keep a boat from drifting aimlessly in case of a motor malfunction, and in a storm it will steady a boat and help keep it from capsizing.

doesn't work too well for bailing. Besides, it's hard on the hat.

An ANCHOR and a strong ANCHOR LINE should be carried as a matter of convenience as well as safety. A boater may wish to anchor in a quiet cove to fish or swim, or he may need to drop anchor to wait out a storm. Every boater should also know how to improvise a "sea anchor" out of his jacket or pants to help steady his boat if the motor quits during a sudden storm. (See illustration). Some EXTRA LINE should be carried for this purpose.

It is always advisable to include a few basic TOOLS with the boating gear. Temporary or minor repairs may have to be made while on the water.

Whether going by car, snowmobile, cycle or boat, the traveler should always carry a FIRST-AID KIT. A DISTRESS FLARE is also good insurance. Accidents and injuries can happen anywhere, so why not be prepared? If a person finds himself having to stay out overnight unexpectedly, he will be glad he has the equipment to build a fire, construct some type of shelter and signal for help.

Lastly, there are the EXTRAS — extra FUEL, extra PARTS for the motor, extra FLASHLIGHT BATTERIES, extra CLOTHING in case the weather turns cold or passengers get wet. Even bringing a little extra FOOD might not be a bad idea.

If all laws are obeyed — federal, state and, above all, the law of common sense — boating can always be a safe and enjoyable experience.

FOR ADDITIONAL INFORMATION CONCERNING MONTANA'S WATER SAFETY REGULATIONS, WRITE TO:
INFORMATION & EDUCATION DIVISION
WATER & HUNTER SAFETY SECTION
FISH AND GAME DEPARTMENT
HELENA, MT. 59601

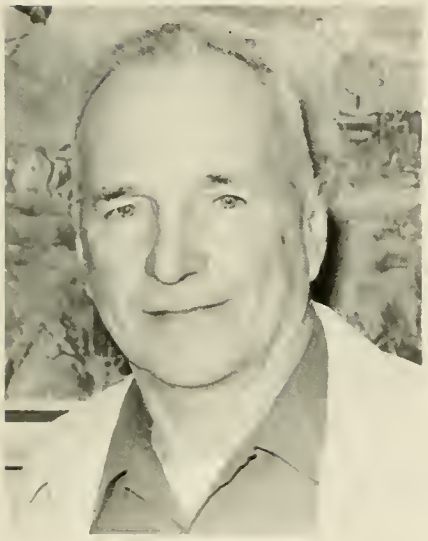
ALL life preservers and fire extinguishers must be Coast Guard-approved

TYPE OF BOAT	CLASS A Less than 16 feet in length	CLASS 1 Over 16 feet and less than 26 feet in length	CLASS 2 Over 26 feet and less than 40 feet in length	CLASS 3 Over 40 feet and less than 65 feet in length
LIFE PRESERVERS	One for each person aboard	One for each person aboard	One for each person aboard	One for each person aboard
RUNNING LIGHTS	If boat is in operation during hours of darkness	If boat is in operation during hours of darkness	If boat is in operation during hours of darkness	If boat is in operation during hours of darkness
FIRE EXTINGUISHERS	None—if boat is of a complete open construction - One B-I type in other cases.	None—if boat is of a complete open construction - One B-I type in other cases	At least two B-1 type or one B-II type	At least three B-I type or one B-I type and one B-II type
VENTILATING SYSTEM	If boat is carrying or using a flammable or toxic fluid in an enclosure	If boat is carrying or using a flammable or toxic fluid in an enclosure	If boat is carrying or using a flammable or toxic fluid in an enclosure	If boat is carrying or using a flammable or toxic fluid in an enclosure
NOISE MAKERS	None	At least one (mouth, hand or power operated—audible for at least one-half mile)	At least one (hand or power-operated —audible for at least one mile)	At least one (power operated — audible for at least one mile)
FOG BELL	None	None	One	One
FLAME ARRESTOR or BACKFIRE TRAP	If boat has inboard motor	If boat has inboard motor	If boat has inboard motor	If boat has inboard motor

Children 12 years or younger must WEAR life preservers when the boat is in motion

new commissioners

Willis B. Jones



Arnold N. Rieder

Robert J. Emmons

WILLIS BLAIR JONES, a Billings attorney and ranch owner, began serving a two-year term with the Montana Fish and Game Commission on March 1. His appointment will end on April 11, 1973.

Mr. Jones, 53, has lived in Montana all his life and has spent more than 20 years in the field of law and law enforcement. Now the senior member of the law firm of Jones, Olsen and Christensen in Billings, Jones received a Bachelor of Law degree from the University of Montana, Missoula, in 1948. He is a former Montana Highway Patrolman, Assistant State Attorney General, and Billings police judge and city attorney.

Mr. Jones and his wife, Ethyl, have two sons, Orville, a senior at Montana State University, Bozeman, and Blair, a freshman at MSU. All of them are ardent sportsmen, and they particularly enjoy hunting and fishing. The family owns a summer home in the Beartooth Mountains above Red Lodge and a ranch in the Bull Mountains near Roundup. They reside in Billings, where they live on a 30-acre tract of land and raise registered Arabian horses.

ARNOLD N. RIEDER, 65, a Boulder rancher and eight-term legislator, will serve on the Montana Fish and Game Commission for a one-year term ending April 11, 1972. His appointment, along with that of Robert J. Emmons, was confirmed by the Montana State Senate on March 26.

Mr. Rieder, a former state legislator from Jefferson County, served four terms as a Representative and four as a Senator. He sat as chairman of the Fish and Game Committee in both the House and Senate. Mr. Rieder has introduced numerous fish and game bills, including the Permanent Stream Preservation Act of 1965. Since sponsoring Montana's hunter safety bill in 1958, he has taught several hunter safety courses.

In 1965 Rieder was named Legislative Conservationist of the year. He has worked for the Malheur Migratory Bird Refuge in eastern Oregon and has served as Soil Conservation Supervisor of the Jefferson River District. He is now a representative on Montana's Grass Conservation Commission and a member of the County Farm Home Administration Board.

Mr. Rieder has been in the livestock business most of his life. He and his wife, Floy, have four children.

ROBERT J. EMMONS, a Great Falls lawyer with the firm of Smith, Emmons and Baillie, has been appointed to the Montana Fish and Game Commission for a four-year term ending April 11, 1975.

Born and educated in Anaconda, Mr. Emmons, 42, received his law degree from the University of Montana, Missoula, in 1950. He has served with the Anti-trust Division, Department of Justice, Honor Program in San Francisco, and is a former Assistant State Attorney General of Montana. In 1959 he drafted the first Air Pollution Act in Montana and presented it in open session before the State House of Representatives.

Mr. Emmons said recently that as commissioner he will be "receptive to listening to the point of view of everyone interested in fish and game activities in Montana." He emphasized, "As a member of the commission, I must rely primarily on the people who manage the fish and game affairs day to day. I expect any judgment to be based on recommendation of the department heads, with great consideration given to any suggestions by persons making requests to the commission."

Mr. Emmons and his wife, DiAnne, have five children.

Would you like to have one of your pictures in this magazine?

Do you have a good slide, print or negative that would fit into the format of MONTANA OUTDOORS? If you do and would like to have it published, send it to — Bill Schneider, Editor, MONTANA OUTDOORS, Fish and Game Department, Helena, Mt. 59601.

Naturally, we can't guarantee that it will be published, but we would still like to see it. Since we have no provision for payment of these pictures, they will have to be submitted on a contribution basis. Also, if we decide they can be used, we will have to keep them in our files until the right opportunity comes along.

All pictures published will be accompanied by a credit line unless the information is not available.

THE LAST FREE ONE

The May / June MONTANA OUTDOORS will be the last issue distributed on a free subscription basis. Only those persons who have sent in the subscription fee will receive the July/ August issue.

Since MONTANA OUTDOORS does not (and should not) use commercial advertising as revenue, this step had to be taken in order to pay for the ever-increasing cost of printing a magazine of this stature. The small subscription fee will by no means pay for the magazine, but it will cover part of the printing costs.

Look on the bright side. Of the seven western states that publish full-color conservation publications, we're the last to go paid. At $2 per year, you can still subscribe at about one-fourth to one-half the cost of most commercial outdoor magazines. You won't have to struggle through pages of commercial advertising looking for a story, and most important, you'll probably learn something.

THE CatcHALL

WOMEN READERS

Starting with this issue, MONTANA OUTDOORS will be more attractive to women.

In the past, MONTANA OUTDOORS has been slanted towards sportsmen. We believe that our magazine should also interest sportswomen. From now on each issue will contain at least one article that is of special interest to women.

This issue's article is "The Merits of Meat" on page 14. It stacks up lots of points for game meat. Try these for openers — it's nutritious, it's tasty and there's no better way to go shopping.

Emerging as a regular feature, "The Other Half" (page 26) will always contain information for our women readers. But if you're a man, don't feel guilty about reading it. I enjoyed it.

PUBLIC LAND

An innocent-looking government report entitled "One-third of the Nation's Land" has created quite an uproar in past months.

The report is the result of a three-year study by the Public Land Law Review Commission (PLLRC) of the laws that govern public land. Its 137 recommendations have already been submitted to Congress for approval. Most of the proposed revisions are excellent, and some of them will have a very beneficial effect on Montana's natural resources. However, there are a few that could spell disaster for the resource and the people who benefit from it.

Since most Montanans benefit from public land, this major revamping of the laws that govern one-third of the United States should be of special interest on the homefront.

Montana's total area stands at 93,361,920 acres. Of this total, 28,073,716 acres (30.1 per cent) are managed by federal agencies. According to the 1970 census, 694,409 persons live in Montana. That figures out to be 40.3 acres of public land for each Montanan. This is your land, so keep an eye on your share.

In a later issue, MONTANA OUTDOORS will take a closer look at the PLLRC's recommendations and the effect on our natural resources. In the meantime, we suggest you keep close tabs on the proposed revisions in public land policy.

Copies of the report are available from the U.S. Government Printing Office, Washington, D.C. 90401, at $4.50 each.

DEER, ROADSIDES AND MOTORISTS

Spring brings more deer to roadsides and borrow pits, so if you're driving, keep alert.

Heat from the sun absorbed by blacktop makes roadsides

among the first areas to green up each spring. After a long winter on dry food, deer feed eagerly on the newly greened areas. Even grasses, which make up a very small part of a deer's annual diet, are eaten during the early spring.

Losses suffered to traffic are of little consequence to the overall deer population. However, to the motorist who suddenly finds one on his hood, it's a frightening, dangerous and costly experience.

HUMAN RESOURCES

If you have a problem, and most people do, there is now a place where you can air it and get some results.

It's called the Montana Council on Human Resources, and it was established by Governor Forrest H. Anderson in June, 1969.

The council's primary goal is to become aware of and to try to solve the problems that face Montanans. The multidepartmental advisory council includes representatives from the Fish and Game Department and 19 other state agencies. Other member agencies are: Civil Defense Agency, Comprehensive Health Planning Program, Cooperative Extension Service, Coodinator of Indian Affairs, Department of Health, Department of Institutions, Department of Planning and Economic Development, Department of Welfare, Governor's Crime Control Commission, Highway Safety Director, Director of Labor Industry and Apprenticeship Council, Montana Commission on Aging, Montana State Library, Office of the Attorney General, Office of the Governor, Selective Service Commission, State Economic Opportunity Office, Superintendent of Public Instruction and the University System.

If you or your organization have a problem that you think should come up before the council, contact Mr. Jack Carver, Council Chairman, Power Block, Room 509, Helena, MT. 59601 (phone: 449-2590) or J. C. Kennedy, The Armory, 1100 N. Main, Helena, MT. 59601 (phone: 449-3034).

The problem should be submitted to the council at least four weeks prior to the monthly meeting which is held on the third Friday of each month. This gives each member time to research and discuss it before you present it.

After the presentation, the problem and possible solutions will be reviewed and you will be contacted with the results.

Shooting is not for the birds.

Be careful which bird you shoot at this year. Odds are about 68 to 1 that it's protected by law. Out of 342 birds that frequent Montana, only five can legally be shot at any time. They are crows, magpies, starlings, house sparrows and rock doves (pigeons).

IT CAN BE DONE

It took three years, but Illinois conservationists have seemingly won their long battle to stop U.S. Steel Corporation from polluting Lake Michigan and the Calumet River.

On Jan. 18, 1971, the Illinois Circuit Court approved a landmark consent decree requiring the U.S. Steel Corporation to eliminate pollution from its huge Chicago area mills by a combination of recycling and treatment procedures. The ruling should result in a pollution-free operation by Oct. 31, 1975.

Two aspects of this case should especially interest Montanans.

First of all, plaintiffs in this case were not bluffed by the old "technological solutions are not now available" routine. They demonstrated that a solution was both technically feasible and economically practical, and the court believed them.

Secondly, U.S. Steel is one of the largest and oldest corporations in the nation. If they can find the means to clean up their operations, Montana industries can certainly do the same.

SPECIAL PERMITS

It's time to stop dreaming about next fall's hunt and start doing something about it.

With one exception, all special permit applications for moose, bighorn sheep, mountain goats or antelope must be submitted to the Fish and Game Department in Helena before July 1, 1971. The exception applies to those wishing to hunt bighorn sheep in unlimited areas (areas without a quota where an applicant can be assured of a permit). These bighorn sheep applications must be in Helena before Sept. 14, 1971.

Applications postmarked later than the above dates will not be accepted.

Before applying, obtain a copy of the 1971 regulations and read it thoroughly. Regulations and application forms are available at license agents and Fish and Game offices.

QUOTE

John Muir, a famous naturalist, has been credited with the statement that when one tugs at a single thing in nature, he finds it attached to the rest of the world.

by Louise Fenner

Some hunters sit back and dream about the thrill of last fall's hunt without worrying about the value of the meat they acquired. Perhaps their wives, however, wonder whether the meat is as good as domestic varieties. They need not worry. Game meat not only **equals** the nutritional value of domestic meat, but **excels** it.

With few exceptions (for instance, beaver) game meat contains less than half the calories found in the same amount of beef and lamb, and even a smaller percentage of the calories found in pork. Wild meats have only one-fourth the fat content of beef and one-fifth that of pork, and yet they contain a higher percentage of protein, minerals and many vitamins.

When domestic and wild varieties of the same family are compared, the wild meats come out somewhat better. A rabbit shot in the field will have a lower fat and calorie content than one commercially raised—and both varieties produce meat with less fat and more protein than beef, pork or lamb. Wild duck also contains less fat and fewer calories than domesticated duck. Of course, the type of cut and method of cooking influence the nutritional value and calorie count of rabbit or any other meat. (For this reason, studies are usually done with uncooked meat).

There is a surprising and frustrating lack of information about the composition and nutritional value of western game — with the exception of venison, rabbit and duck. Fortunately, some studies were made recently on the diet of Alaskan Eskimos that yielded information about moose, black bear and several other game species. This information appears in the following tables, which give the nutritional value of some domestic and game meats and fishes that are available in Montana. No information could be found on elk, mountain goat, bighorn sheep, bison or wild turkey.

LEGEND AND SOURCES

gm: grams
mgm: milligrams (1,000 mgm. = 1 gm.)
I.U.: International Units
A blank (—) indicates that no information is available.

SOURCES

ADS—The Alaskan Dietary Survey, 1956-61, by Heller and Scott, "Table 87, Composition of Alaskan Foods, 100 grams," U. S. Dept. of Health, Education and Welfare (HEW), 1967.
B—Bulletin now in press, "Composition and Nutritive Value of Alaskan Game Meats," Cooperative Extension Service, U. S. Dept. of Agriculture (USDA), University of Alaska; from an unpublished manuscript by Christine Heller, Nutritionist, Arctic Health Research Center, U. S. Dept. HEW, Anchorage, Alaska.
USDA—"The Composition of Foods—raw, processed, prepared," Table 1, 100 grams, edible portion, Handbook No. 8, USDA, 1963.

EDITOR'S NOTE—Louise Fenner, 22, was graduated from the University of Montana, Missoula, in 1970 with a Bachelor of Arts degree in journalism. She has served as staff writer on MONTANA OUTDOORS since joining the department in November, 1970.

COMPOSITION AND NUTRITIVE VALUE OF SELECTED MEATS AND FISHES
100 grams, uncooked

NOTE: 100 grams is about 3½ ounces. An average serving for an adult man might be two or even three times that amount.

	Per Cent of Moisture	Food Energy (Calories)	Protein (gm)	Fat (gm)	Calcium (mgm)	Phosphorus (mgm)	Iron (mgm)	Vitamin A (mgm)	Thiamin (mgm)	Riboflavin (mgm)	Niacin (mgm)	Source of Analysis
MEAT—DOMESTIC												
Beef, total edible, trimmed to retail level, good grade (78% lean, 22% fat)	60.3	263	18.5	20.4	11	171	2.8	40	.08	.16	4.4	USDA
Lamb, composite of cuts, trimmed to retail level, choice grade, (77% lean, 23% fat)	61.0	263	16.5	21.3	10	147	1.2	—	.15	.20	4.8	USDA
Pork, composite of trimmed lean cuts, medium fat class, (77% lean, 23% fat)	56.3	308	15.7	26.7	9	175	2.3	0	.76	.18	4.1	USDA
Ham, light cure, medium fat class, (76% lean, 24% fat)	56.5	282	17.5	23.0	10	162	2.6	0	.72	.19	4.1	USDA
Frankfurter, all classes	55.6	309	12.5	27.6	7	133	1.9	—	.16	.20	2.7	USDA
Rabbit, domestic	70.0	162	21.0	8.0	20	352	1.3	—	.08	.06	12.8	USDA
Veal, total edible, excluding kidney and kidney fat, medium fat class, (84% lean, 16% fat)	68.0	190	19.1	12.0	11	193	2.9	—	.14	.25	6.4	USDA
MEAT—GAME												
Black Bear	71.2	148	18.6	8.2	3	139	6.1	261	.160	.680	3.2	B
Moose	72.4	123	25.1	2.5	10	219	2.7	650	.074	.027	5.0	B
Rabbit, wild	73.2	129	21.0	5.0	12	226	3.2	—	.030	.060	6.5	B
Venison, lean only	74.0	126	21.0	4.0	10	249	—	—	.23	.48	6.3	USDA
Ground Squirrel	75.4	115	10.1	3.8	2	168	4.5	220	.095	.372	6.2	B
Beaver	46.2	408	14.3	39.0	15	262	5.9	176	.061	.310	1.9	B
Muskrat	73.4	101	22.4	1.3	25	220	7.6	2820	.095	.372	6.2	B
FOWL—DOMESTIC												
Duck, flesh only	68.8	165	21.4	8.2	12	203	1.3	—	.10	.12	7.7	USDA
Chicken, light meat, flesh only	73.7	117	23.4	1.9	11	218	1.1	60	.05	.09	10.7	USDA
Chicken, dark meat, flesh only	73.7	130	20.6	4.7	13	188	1.5	150	.08	.20	5.2	USDA
Goose, flesh only	68.3	159	22.3	7.1	12	203	1.3	—	.10	.12	7.7	USDA
Squab (pigeon), flesh only	72.8	142	17.5	7.5	—	—	—	—	—	—	6.6	USDA
Turkey, light meat, flesh only	73.0	116	24.6	1.2	—	—	1.0	—	.06	.11	11.3	USDA
Turkey, dark meat, flesh only	73.6	128	20.9	4.3	—	—	2.0	—	.09	.18	4.7	USDA
FOWL—GAME												
Duck, flesh only	70.8	138	21.3	5.2	—	—	—	—	—	—	—	USDA
Canadian Goose, flesh only	—	—	—	—	—	312	5.6	—	.28	.46	9.3	ADS
Pheasant, flesh only	67.9	162	23.6	6.8	—	—	—	—	—	—	—	USDA
Quail, flesh only	66.3	172	25.4	7.0	—	—	—	—	—	—	—	USDA
FISH												
Northern Pike	80.0	88	18.3	1.1	—	—	—	—	—	—	—	USDA
Yellow Perch	79.2	91	19.5	.9	—	180	.6	—	.06	.17	1.7	USDA
Coho (Silver) Salmon	—	—	—	—	175	231	—	—	.09	.11	—	USDA
Coho Salmon, canned, solids and liquids	69.3	153	20.8	7.1	244	288	.9	80	.03	.18	7.4	USDA
Trout, brook	77.7	101	19.2	2.1	—	266	—	—	—	.07	—	USDA
Trout, lake	70.6	168	18.3	10.0	—	238	.8	—	.09	.12	2.7	USDA
Trout, rainbow	66.3	195	21.5	11.4	—	—	—	—	.08	.20	8.4	USDA
Tuna, canned in oil, solids and liquids	52.6	288	24.2	20.5	6	294	1.1	90	.04	.09	10.1	USDA
Tuna, canned in water, solids and liquids	70.0	127	28.0	.8	16	190	1.6	—	—	.10	13.3	USDA

Fish Introduction

past, present and future

by Bill Alvord

Some of those trout you caught last summer might have been descendents of fish that were introduced into Montana lakes and streams by cavalrymen stationed at one of the army forts in the Territory in the late 1800's. Apparently a few of these ingenious men saw to it that a can or two of fish occasionally accompanied the freight wagons bringing supplies to the post.

Perhaps the ancestors of some of those little sunfish you saw around the lake dock rode an early day train from Minnesota to the Montana Territory. You can almost hear a cabin owner commenting, as he pours some brilliant little pumpkinseeds into the water, "There's some of the finest trout fishing I ever ran into here in the lake, but I want something the kids can catch when they come out next summer."

PAST

These were the types of introductions that comprised the first fish stocking in Montana. It really doesn't require a great stretch of the imagination to see how they came about. Unfortunately, records were seldom made. Occasionally a brief entry regarding an introduction of fish was made in some journal or personal diary, but these early operations were almost wholly private undertakings and there was no particular reason to report them.

Before hatcheries began using trucks to transport fish, most plants were in waters adjacent to railroad tracks. One of the first automobiles used for transporting fish is pictured below. It's actually a Buick touring car (circa 1928) converted into a hatchery truck. (F&G photo)

Considered a revolution in truck captured outside air to tanks. This allowed trucks to distances with minimum fish ment employees, the design state and federal agencies

Among the settlers who moved to the Territory, a few had a passing acquaintance with the art of fish culture. These men, once they had taken care of the necessities of life, set up a fish trough or two near a spring, trapped or caught some fish to obtain eggs and then hatched out a few fry. Fish from these early hatchery operations were well received by residents of the area and were usually planted in nearby waters.

The U.S. Bureau of Fisheries was in the fish culture business as early as the 1870's, shipping Lake Superior whitefish, rainbow trout, brown trout, lake trout, brook trout, largemouth and smallmouth bass to Montana from eastern hatcheries. However, it wasn't until 1897 that the first federal hatchery was established in Montana, near Bozeman.

Present records do not show just where the fish were stocked, but in 1903 the hatchery planted 95,000 brook trout, 400,000 Rocky Mountain trout (cutthroat), 50,000 steelhead, 2,000 mackinaw trout, 1,500,000 grayling, 40,000 rainbow trout and 800,000 Lake Superior whitefish fry in Montana waters.

The whitefish were destined for Flathead Lake. Here was an excellent food fish that Fish and Game Department authorities felt would do well in Flathead Lake and would provide the basis for a future commercial fishing industry. However, the plan failed because sportsmen objected to commercial fishing in Flathead Lake on the grounds that too many sport fish were taken. The whitefish failed to develop into a sport fish and only a few remain today.

The Bozeman hatchery provided fish for several surrounding states, and the demands on the station were always much greater than the output. Montana fishermen felt the need for a state fish hatchery. In 1900, Dr. Morton J. Elrod of the University of Montana at Missoula, then chairman of the State Board of Game and Fish, had published a questionnaire in all the state's newspapers. Among the questions was, "Are you in favor of establishing a state fish hatchery?" The response was almost unanimously affirmative.

In the 1905 biennial recommendations to the state legislature, State Game Warden W. F. Scott requested construction of a state fish hatchery, estimating the cost at $5,000. The hatchery was finally constructed at Anaconda in 1907. Its activities were considerable, as the early distribution reports showed. According to the report of the Board of Fish Commissioners, 14,400,000 fish were planted between Jan. 1, 1909, and Dec. 30, 1910.

A fish hatchery was actually built in Montana two years before the Anaconda station but it was an entirely private operation. Senator W. A. Clark built a fish culture station at Columbia Gardens near Butte. Production from this station was turned over to the Butte Anglers Club for planting in adjacent waters. It is possible that Senator Clark was interested only in promoting

transportation, this 1949 Ford
dd oxygen to the fish-bearing water
rry more and travel longer
rtality. Developed by depart-
copied by almost all other
olved in fish planting. (F&G photo)

The evolution of hatchery truck design and capability is one example of progress achieved in fish management over the years. (F&G photo)

Methods of planting fish in Montana waters have improved along with other management techniques. (F&G photo)

good fishing in his area; however, providing free fish to the public was an activity guaranteed to make him not unpopular with voters.

To better stock the waters of northwestern Montana, a fish hatchery was needed near Flathead Lake. In 1913 a state hatchery was erected near the town of Somers. The equipment at the Somers station included a motor car and 31-foot gasoline launch designed to haul the fish cans from the hatchery to Somers. There the cans were transferred to a special railroad car equipped with air pumps, tanks, bunks and cooking facilities.

The railroad car was, for many years, an integral part of the state's fish distribution system. Usually two men were assigned to travel with the fish car to keep the pumps operating properly, to check on the condition of the fish and to dole them out at scheduled stops along the route. Sportsmen cooperating in the planting program would meet the fish car at the station, load their allotment of fish onto cars, trucks and pack horses and haul them to the waters to be stocked. With all these sportsmen transporting fish to their favorite fishing spots, there were very few waters that didn't eventually receive some kind of fish introduction.

A department director, the late A. A. O'Claire, recalled some years ago that one of his first assignments after being hired was to accompany the fish car. He would never forget, he said, arriving in Baker around 2 a.m., loading a dozen or so fish cans onto a depot baggage cart and hauling them through the middle of town one-quarter of a mile to the reservoir. The noise made by those rattling fish cans could be heard for miles and woke the entire town.

As the state developed and funds became available, several state fish hatcheries were constructed in the 1920's and early 1930's. The stations included units at Emigrant, Salmon Lake, Georgetown Lake, Philipsburg, Lewistown, Great Falls, Big Timber, Red Lodge, Hamilton, Libby, Polson (Station Creek), Ovando, Lake Francis, Missoula, Arlee and Bluewater (Bridger). In addition, several rearing ponds and feeding stations were maintained in cooperation with sportsmen's organizations.

Although the rearing pond program at first appeared to solve the problem of providing trout for many streams and lakes in the state, the plan failed to live up to expectations. The ponds were gradually phased out in Montana and in neighboring states because it turned out to be more practical and economical to plant directly from the fish hatchery. As highways were improved and modern distribution trucks demonstrated their efficiency, it became cheaper to transport fish from a centrally located hatchery than to maintain a large number of small stations.

PRESENT

Montana now has seven state fish hatcheries. In addition, three national hatcheries are maintained by the Bureau of Sport Fisheries and Wild-

life. What was formerly the Bozeman National Fish Hatchery is now the Fish Cultural Development Center, where the objective is research rather than production. The center investigates problems associated with regional fish hatchery operations, such as diet quality, diagnosis and treatment of fish diseases and water quality.

State, federal and private fisheries operations have increased in recent years in the United States. Unfortunately, fish diseases have become more prevalent along with the increased production. Some diseases, particularly those of viral origin, have wiped out the entire production at some hatcheries. This loss of fish represents a considerable wasted expenditure, and it creates the difficult problem of disinfecting the station and the risk of reinfection. State fish hatcheries in Montana have not experienced a major outbreak of a serious fish disease and all precautions are being taken to maintain this record.

Recognizing the danger of viral disease, the Montana department was one of the first in the nation to require an inspection of fish and fish eggs by a qualified fish pathologist before they can be shipped into the state. Montana hatcheries are largely self-sufficient, so that quality brood stocks provide most of the eggs needed. Only a few egg exchanges are made with other states to maintain species of fish, such as northern pike and walleye, for which spawn is not normally available.

FUTURE

Fish hatchery facilities in the state are adequate to supply present demand for fish and, with a systematic program of upkeep and maintenance, the demand for perhaps the next 10 years. Nationally, all signs indicate that the need for hatchery fish will increase. A reduction in the amount of quality fishing waters can be expected, and at the same time the number of fishermen with leisure time to spend fishing will increase.

To meet this need, the department is making plans to remodel and expand its existing hatcheries. If funds become available and appropriate sites are found, it is possible that some new fish hatcheries are in Montana's future.

EDITOR'S NOTE—This May, William Alvord will celebrate his 20th anniversary with the department. Formerly a district fish biologist and district fish manager, he now serves in Helena as Superintendent of Fisheries. In 1950 he received a Bachelor of Science degree in fish and wildlife management from Montana State University, Bozeman, and one year later he obtained a Master of Science degree in the same field. In 1969 he served as president of the state chapter of the American Fish Society.

MONTANA FISHES UTILIZED BY ANGLERS

Introduced species

Rainbow trout — Salmo gairdneri
Brown trout — Salmo trutta
Brook trout — Salvelinus fontinalis
Golden trout — Salmo aguabonita
Kokanee — Oncorhynchus nerka
Coho salmon — Oncorhynchus kisutch
Lake Superior whitefish — Coregonus clupeaformis
Largemouth bass — Micropterus salmoides
Smallmouth bass — Micropterus dolomieui
Black crappie — Pomoxis nigromaculatus
White crappie — Pomoxis annularis
Yellow perch — Perca flavescens
Walleye pike — Stizostedion vitreum vitreum
Northern pike — Esox lucius
Bullheads — Ictalurus spp.
Bluegill — Lepomis macrochirus
Rock bass — Ambloplites rupestris

Native species

Cutthroat trout — Salmo clarki
Lake trout — Salvelinus namaycush
Mountain whitefish — Prosopium williamsoni
Dolly Varden trout — Salvelinus malma
Grayling — Thymallus arcticus
Channel catfish — Ictalurus punctatus
Burbot — Lota lota
Sauger — Stizostedion canadense
Drum — Aplodinotus grunniens
Paddlefish — Polyodon spathula

MONTANA'S FISH HATCHERIES

F&G hatcheries

Washoe Park Trout Hatchery at Anaconda.
Jocko River Trout Hatchery at Arlee.
Yellowstone River Trout Hatchery at Big Timber.
Bluewater Springs Trout Hatchery near Bridger.
Giant Springs Trout Hatchery at Great Falls.
Big Springs Trout Hatchery at Lewistown.
Flathead Lake Salmon Hatchery at Somers

BSFW hatcheries

Ennis
Creston
Miles City
What was formerly the Bozeman National Fish Hatchery is now the Fish Cultural Development Center, where the objective is research rather than production.

THE LEGISLATIVE ROUNDUP

During the 42nd legislative session, conversation often turned to the law-makers' inability to act on environmental legislation. We tend to disagree with this. In fact, the majority of the environmental bills were passed and signed into law.

Naturally, we support all bills that benefit Montana's natural resources. In this session some bills that would have greatly enhanced the environment failed, but when all the points were counted, the result was a giant step toward the formation of a livable environment for wildlife and a quality environment for man.

A brief note of explanation is necessary. "SB 22: Northey, R—Missoula, et al — Protection for Mountain Lions" refers to Senate Bill 22, sponsored by Senator Northey, a republican from Missoula, and others (et al). The subject of the bill is protection for mountain lions. All bills become effective on July 1, 1971, unless otherwise indicated.

SENATE BILLS

PASSED

SB 5: Drake, R-Lewis & Clark—Method of Taking Game Fish

This bill amends laws regarding sports fishing by providing that scuba divers may take game fish in waters designated by the Fish and Game Commission. Formerly only the taking of nongame fish was allowed.

SB 22: Northey, R-Missoula, et al—Protection for Mountain Lions

The official classification of mountain lions has been changed from predator to game animal, thus giving them the same protection as other game animals. Therefore, beginning July 1, 1971, mountain lions may not be shot or trapped except under seasons and regulations prescribed by the Fish and Game Commission or as provided for in Senate Bills 178 and 247.

SB 23: Klindt, R-Yellowstone, et al—Changing of Bear Licenses

Beginning in the fall season of 1971, Montana residents must have a $5 license in addition to a big game license in order to take black bears or color phases. Cost of the resident grizzly hunting license is raised from $1 to $5, but the trophy fee remains at $25. Nonresidents may hunt black bears under a $35 license that is purchased in addition to the regular $151 license. Cost of the nonresident grizzly license is raised from $25 to $35. The trophy fee remains at $25 for nonresidents.

SB 45: Mitchell, D-Cascade, et al—Stream Alteration

This act enlarges the scope of Montana's stream alteration bill. Exemptions from the bill are provided for any irrigation district projects and irrigation systems. Under a new section of the bill, the Fish and Game Commission may make formal objections to appropriate federal agencies regarding acts or omissions by federal agencies which may adversely affect the fish and wildlife resource.

SB 54: Lynch, D-Silver Bow, et al—Snowmobile Restrictions

The new law prohibits use of snowmobiles to rally or harass game animals, game birds or furbearers. It also prohibits discharge of a firearm from or upon snowmobiles and it requires mufflers on all snowmobiles except those designed for racing. Wardens will enforce all these provisions.

SB 65: Lowe, R-Yellowstone, et al—Outfitters Bill

This bill changes the licensing and regulation of outfitters and guides and the status of nonresidents hunting in Montana. Outfitters and guides fall under three classifications: 1. outfitters (furnish both facilities and service) 2. professional guides (employed by outfitters, furnish services only) and 3. resident guides (residents who guide without receiving compensation). Outfitters and professional guides must be licensed by the Fish and Game Commission. Resident guides need only a current conservation license.

Beginning May 1, 1972, nonresidents hunting big game in Montana on federal lands or state game ranges must be accompanied by a licensed outfitter, professional guide or resident guide. Exceptions are nonresidents hunting on fenced property with the permission of the landowner, or nonresidents hunting in special deer and antelope areas. The Fish and Game Commission will set certain standards

and regulations for outfitters and guides with the aid of recommendations made by an advisory council composed of one licensed outfitter from each (F&G) district.

SB 68: Carl, R-Missoula, et al—Hunter Orange

Big game hunters are required to wear as exterior garments a total of 400 square inches of a daylight fluorescent orange color. Exceptions are persons hunting with bows and arrows in areas which at the time are open to bow and arrow hunting only. Effective May 1, 1972.

SB 70: McGowan, D-Choteau, et al—Open Cut or Strip-Mined Land Reclamation Act

Persons removing 10,000 cubic yards or more of product or overburden are required to enter a contract with the Board of Land Commissioners, to submit a plan of their operations, and to post a bond in an amount not to exceed the costs of restoration. The board will require certain land reclamation and may contract for or cause such reclamation where bonds have been forfeited. Miners under contract will eventually be relieved of up to one-half the cost of land reclamation through tax benefits. Effective on passage and approval.

SB 126: Graham, D-Big Horn, et al—Pesticide Board

This act creates a State Pesticide Board including Commissioners of the State Department of Agriculture, State Entomologist, Fish and Game Director, State Forester, Board of Health Executive Officer, Executive Officer of Livestock Sanitary Board and five lay members. Controls include registration of pesticides, licensing of applicators, regulation of labeling, sales and application of pesticides and disposal of containers. Effective Jan. 1, 1972.

SB 138: Klindt, R-Yellowstone, et al—Littering

This act states, "Any holder of a Montana resident or nonresident fishing or hunting license or camping permit convicted of littering campgrounds, public or private lands, streams or lakes while hunting, fishing or camping shall forfeit his license and privilege to hunt, fish, camp or trap within Montana for a period of 90 days from the date of conviction."

SB 144: Northey, R-Missoula, et al—Protection of Various Birds

Beginning July 1, 1971, this act prohibits killing. selling or transporting, or destruction of nests or eggs, of hawks, eagles, herons, blackbirds and kingfishers. The Fish and Game Commission may issue a $3 falconer's license renewable annually to persons 12 years and over. No more than three falcons may be possessed by one license holder. Provisions also regulate the period when license holders may take falcons and the number of birds that may be taken from individual nests.

SB 178: McCallum, R-Sanders, et al—Stock-killing Lions and Bears

Stock-killing mountain lions and bears can be hunted with dogs by the livestock owners, (F&G) department employees and the U.S. Fish and Wildlife Service.

SB 230: Hafferman, D-Lincoln—Sturgeon

This bill makes the sturgeon (Acipenser) a game fish.

SB 247: Northey, R-Missoula, et al—Lion Hunting

The bill states, "The Montana Fish and Game Commission shall have authority to allow and regulate the use of dogs for hunting mountain lions."

SB 287: Klindt, R-Yellowstone, et al—Grizzly Hunters

Persons who shoot a grizzly bear may not apply for another such license for the next seven years. Persons who hold a grizzly license but do not shoot a grizzly may apply for another license the succeeding years if they return their unused special licenses to the Fish and Game Commission before or when application is made.

Extraordinary SB 7: Natural Resources Committee—Mining Claims

This bill eliminates the requirement that a 10-foot deep hole be dug in order to prove a mining claim. Alternate methods, such as drilling, would be acceptable as proof of a mineral discovery.

KILLED

SB 27: Bollinger, D-Valley, et al—Water Pollution Control

This bill, similar to House Bill 85 (passed), would have turned the water pollution control programs over to the State Board of Health and would redefine pollution and provide for a Director of Water Pollution Control.

SB 38: Flynn, D-Missoula, et al—Beverage Containers

This bill would have required all beverage containers to be both redeemable and chemodegradable (consisting of a material that would completely decompose within two years when exposed to the elements).

SB 49: Lynch, D-Silver Bow, et al—Catchable Fish Stamp

A "catchable fish stamp" in addition to a regular fishing license would be required for persons fishing in waters where fishing is maintained primarily by the planting of fish which are large enough to keep (six inches or more).

SB 55: Turnage, R-Lake, et al—Garbage Systems on Boats

Boats with garbage disposal systems would have been required to have such systems securely sealed. Violation of this law would be classified a misdemeanor.

SB 79: Klindt, R-Yellowstone, et al—Mining Land Reclamation

The many sections of this bill would have tied strip miners to the responsibilities of minimizing environmental damage and would have required the reclamation of disturbed lands. Inspection of strip mining operations by a five-member reclamation commission, and the development of individual reclamation plans for each operation, were included in the bill's provisions.

SB 98: Flynn, D-Missoula, et al—Environmental Protection Act

The defeated bill provided that any Montana citizen, agency, political subdivision, etc., could file an action in district court for the protection of air, water and other natural resources. The person filing the complaint did not have to be directly affected by the pollution.

SB 100: Mitchell, D-Cascade, et al—Stream Flow

The act would have given the Fish and Game Department authority to file for minimum flows from the presently unappropriated remainder of the flow of all streams in a manner that Section 89-901 now provides on 12 stream sections. For example, if a stream's average flow was 50,000 feet per second and 45,000 fps was already appropriated, the department could file for use of the remaining 5,000. The water would then be left for use by fish and fishermen.

SB 149: McKeon, D-Deer Lodge, et al—Dust Control

Surfacing or other dust control measures would have been required on slum ponds, lagoons or settling ponds.

SB 172: Boylan, D-Gallatin, et al—Administration of Poison Labeling Act

This bill would have taken administration of the poison labeling act ("The Montana Insecticide, Fungicide and Rodenticide Act of 1947") from the Department of Health and would have given it to the Department of Agriculture.

SB 204: Sheehy, D-Yellowstone, et al—Electrical Land Use

The Montana Railroad and Public Service Commission would have received the power to regulate the location of future power plants and transmission lines with a capacity of 115,000 volts or more.

SB 276: Sheehy, D-Yellowstone, et al—Environmental Damage

This bill would have allowed any person to file an action in district court against any person causing or about to cause damage to the environment.

Legislative Roundup . . .

SB 293: Mitchell, D-Cascade, et al—Mandatory Checking Station Stop

It would have become mandatory for persons to stop at Fish and Game Checking Stations and to produce for inspection their licenses and any game animals in their possession.

SB 298: James, D-Liberty, et al—Fish and Game Director

This bill would have repealed a section of Montana law which states, "He (the Fish and Game Director) shall be subject to the supervision and control of said commission and may be removed from office by said commission only for neglect of duty, incompetency or other good cause, and after full hearing on verified charges."

SB 303: Mitchell, D-Cascade, et al—Water Quality

This act would have revised an existing law regarding water quality. If it had passed, recreation and wildlife would be included in the listing of legal beneficial uses of water, and further protection of water quality would be required.

SB 335: Carl, R-Missoula, et al—Insecticides

This bill would have prohibited the sale, use or distribution in Montana of any insecticide of the chlorinated hydrocarbon group. Exceptions were use of the pesticide in the practice of veterinary medicine in structural pest control where adequate alternative pesticides were unavailable, or use for experimental purposes and then only under strict control of the State Department of Health.

SB 337: Thiessen, D-Richland, et al—Mining Land Reclamation

The defeated bill provided for reclamation of land stripped for coal mining where the overburden exceeded 10 feet in depth. No provisions were made for other types of mining or for prospecting.

HOUSE BILLS

PASSED

HB 22: Yardley, D-Park; Warfield, R-Park—Junked Cars in Streams

This act makes it unlawful to use junked motor vehicles or portions of them for flood control between high water channel banks of any stream or to reinforce banks of any stream. There will be assessed an annual fee of $2 on motor vehicles, excepting motorcycles which will be assessed 50¢, for a state program of motor vehicle disposal. County commissioners will provide for operation of free motor vehicle graveyards from these earmarked funds.

HB 66: Darrow, R-Yellowstone, et al—Environmental Quality

This act establishes an environmental quality council of 13 members, composed of the governor or his designated representative, four senators, four representatives, and four members of the public appointed by the governor with the consent of the senate. The council will appoint for itself an executive director. The director may appoint a staff to gather and analyze environmental information and review and appraise various state programs from the standpoint of environmental quality. Effective on passage and approval.

HB 85: Ainsworth, R-Missoula, et al—Water Pollution Control

The State Department of Health is now the administrative agency for the state's Water Pollution Control Act. In addition, the Commissioner of Agriculture, a representative of a sports fishing organization, and the Fish and Game Director are now included as members of the state Water Pollution Advisory Council. This act also defines the "natural" conditions of a receiving stream and redefines water pollution. It shortens the time required between issuance of an order to stop and the actual stopping of a polluting discharge.

HB 112: Bradley, D-Gallatin, et al—Anti-litter Measure

It is prohibited to litter on any lands in Montana, either public or private, except in specially provided areas, receptacles, or by an owner or tenant on private property. All state law enforcement officers are directed to enforce the act.

HB 167: Burnett, R-Carbon, et al—Buffalo Rearing

Presently, buffalo are classified as game animals. However, under this amendment persons no longer need a game farm permit to rear buffalo or to have them in captivity.

HB 231: Haines, R-Missoula, et al—Forest Funds for Conservation

This act defines forest lands for conservation purposes as all forest lands within Montana which are officially classified by the Forestry Board as forest land. Conservation is also defined. The act provides for the use of certain funds for forest, forest range, forest water and forest conservation. The act directs the funds to be used for fire prevention, detection and suppression.

HB 243: Fagg, R-Yellowstone, et al—Mining Land Reclamation

This act requires that persons be licensed before engaging in mining exploration activities or actual mining. They must also provide a plan of reclamation acceptable to the Board of State Lands and Investments. A performance bond is required in the amount equal to the cost of the reclamation plan, and liability under the bond will be maintained so long as reclamation is not completed. Effective on passage and approval.

HB 260: Knudsen, D-Valley, et al—Archery Hunting Regulations

According to this bill, "The Fish and Game Commission shall have the authority to promulgate regulations governing the use of livestock and vehicles, by archers, during special archery season."

HB 265: Darrow, R-Yellowstone, et al—Floodway Management

The Montana Water Resources Board is authorized to "carry out a comprehensive floodway management program for the state." In effect, this bill establishes floodplain zoning: land use regulations may be set up in areas where floods are expected to recur on the average of once every 50 years. Artificial obstructions may not be placed in these areas without a permit. A floodway obstruction fund will be provided for removal of trees, silt, debris and other obstruction.

HB 316: Darrow, R-Yellowstone, et al—Landowner Notification Act

This act requires mineral prospectors or others contemplating disturbance of lands to determine the ownership of such lands and to advise the owner, in advance, of their plans.

HB 347: Patrick, R-Lewis & Clark, et al—Holter Lake Game Preserve

A game preserve has been established on both sides of the upper Holter Lake.

HB 412: Nichols, R-Ravalli, et al—Reckless Hunting

This act revokes for 10 years the hunting privileges

of a person who injures or kills another while hunting. It also requires the convicted person to pay all rescue or removal expenses.

HB 438: Swanberg, D-Cascade, et al—Motorboat Regulation

The Fish and Game Commission now has the authority to govern recreational uses of **all public fishing** waters or reservoirs and lakes which it operates under agreement with or in conjunction with a federal or state agency or private owner. The commission may regulate motorboats on all public lakes and reservoirs.

HB 555: E. Smith, R-Sheridan; Burnett, R-Carbon—Cages for Rearing Fish

This Fish and Game Commission-sponsored bill gives the commission power to regulate the use of cages submerged in lakes or streams for the purpose of rearing fish. It prohibits the placing or rearing of caged fish in public waters except as provided by the commission.

KILLED

HB 33: Scott, R-Yellowstone—Montana Environmental Protection Act

This bill would have set up legal machinery whereby impairment or destruction to the air, water, land, timber or other natural resources could be prevented or stopped by court actions.

HB 117: Ulmer, R-Custer, et al—Elk Drawing

This would have repealed the act which requires that all special elk drawings be held in towns nearest the hunting district. It would have authorized the Fish and Game Commission to determine the drawing procedures and the location of drawings.

HB 124: Marbut, R-Missoula, et al—Beverage Containers

Beverage containers with a capacity of less than 40 fluid ounces would have been redeemable for no less than 2¢ each. Litter was also defined under this act.

HB 131: Schoonover, D-Lake—Access on Streams

This act would have declared sloughs of streams between the lines of ordinary high water (from the high water line on one bank to the high water line on the opposite bank) as public water for the purpose of fishing.

HB 157: Bardanouve, D-Blaine, et al—Smith River

If this bill passed, the Smith River from Fort Logan to the mouth of Hound Creek would be designated a State Recreational Waterway.

HB 182: Darrow, R-Yellowstone, et al—State Recreational Waterway

Sponsored by the Fish and Game Commission, this bill would have created a state recreational waterway system, administered by the commission.

HB 244: Fagg, R-Yellowstone, et al—Mining Claims

This act would have repealed the requirement that persons who are staking mineral claims sink a 10-foot deep discovery shaft. In addition, HB 244 provided that within 60 days after a person posted a notice of mineral location, he would have to file a certificate of location (giving specific details) with the county clerk.

HB 297: Dye, R-Gallatin, et al—Bonding License Agents

This act would have given the Fish and Game Commission authority to pay the cost of bonding license agents on a bid basis. Such bonding could probably have been done at a considerably lower cost than under the present system.

HB 343: Towe, D-Yellowstone, et al — Life Preserver Requirements.

Water safety regulations would have been amended to require every person to wear a life preserver while on any river, stream or other body of water with a dangerous current.

HB 356: Knudsen, D-Valley, et al—Disabled Resident's License

The defeated bill read, "Residents of the state of Montana who are totally and permanently disabled may fish during the opening season . . . on purchase of a 15¢ pioneer license."

HB 428: Patrick, R-Lewis & Clark, et al—Taxes on Fish and Game Lands

This act would have required the Fish and Game Commission to pay taxes on its land which would be equal to taxes paid when the land was producing the highest number of livestock or the most crops as assessed during the most productive year of the three years preceding acquisition.

HB 471: Fagg, R-Yellowstone, et al—Mining Lands Restoration

The intent of this act was to give protection and restoration to lands involved in mining exploration by requiring a permit and bonding for mining exploration, and by requiring restoration and reclamation of land following mining exploration.

HB 493: Selstad, R-Cascade, et al—Checking Station

Persons would have been required to stop at Fish and Game Checking Stations and show their licenses and game animals in their possession.

HB 500: Fagg, R-Yellowstone, et al—Scenic Rivers Act

This bill, similar to HB 182 (killed), would set certain standards to maintain the aesthetic and recreational values of certain Montana rivers and lakes.

HB 543: Snortland, R-Pondera—Poison Labeling Act

This would have repealed an act that prohibits false or misleading labeling of poison and unlawful distribution or sale of unregistered poisons. The act to be repealed required many other safeguards for the distributions of poisons, and gave the State Department of Health the power to regulate the sale, distribution and labeling of economic poisons.

HB 544: Perry, R-Phillips, et al—Big Game Licenses

The defeated bill read, "Any license for big game is valid for the season issued and all succeeding regular seasons until the tag has been filled."

HB 548: Bardanouve, D-Blaine—Recreational Waterway Zoning Act

The Fish and Game Commission would have received the power to regulate use of land along any area that has been designated by the legislature as a state recreational waterway.

HB 558: E. Smith, R-Sheridan, et al—Reckless Hunting of Wildlife

This act would have made it a misdemeanor to hunt any wildlife in a reckless or careless manner. The present law applies only to game animals.

HB 577: Whitney, R-Carter, et al—Fish Pond

A sum of $7,800 would have been appropriated from the general tax fund to build a fish pond near Wibaux.

The Other Half

. . . A Woman's Look at Conservation

by Louise Fenner

OUR DIRTY LAUNDRY

In the past few months, detergent manufacturers have been dismayed to find an uproar developing over the amount of phosphates and enzymes in their products. Ecologists are warning that enzymes may be a health hazard and detergent phosphates a major source of pollution of rivers and lakes. The claim of the "washday miracle" is giving way to a new theme — clean wash, but a cleaner environment.

In order to attract the wary housewife nowadays and to avoid getting into trouble with government agencies, detergent producers are beginning to eliminate the offending chemicals from their products. According to TIME (March 8), Proctor & Gamble is removing the enzymes from Tide; Lever Brothers is eliminating them from Drive, and Colgate Palmolive is removing the enzymes from Ajax, Punch, Burst, Cold-Power, and possibly from its pre-soak, Axion. Although there is no definite evidence that enzymes in detergents are harmful to health, much suspicion exists. The American Academy of Allergy has stated that enzymes are a potential hazard, and the Federal Trade Commission has just completed a study on enzymes (as yet unreleased).

Phosphates are accused of polluting the nation's waterways by causing an excessive growth of algae, which leads to the rapid aging, or eutrophication, of the water. Desirable plant life is smothered, and when the algae die the result may be obnoxious odors and fish kills. Both Canada and the United States are concerned about the problem — Canada has banned the manufacture of laundry detergents that contain more than 20 per cent phosphates, and early in March, 42 U.S. Congressmen introduced a bill to ban phosphates in detergents by June 1973.

The problem now is to find a substitute for the phosphates, which do the heavy cleaning work in detergents. NTA (nitrilotriacetric acid) was under consideration until it was found to be a potential threat to health. A return to soap chips is unlikely because they are not designed for today's automatic washers and would gum up the works. There are many phosphate-free detergents on the market, but housewives may have to learn to accept "tattle-tale gray" washes again, since no substitute equals the ability of phosphates to make washes bright. Still, TIME reports that phosphate-free detergents have already captured three per cent of the market.

One other detergent-born chemical is under fire as a source of water pollution. Alkylbenzene-sulfonate is a compound that does not break down in the natural filtering process of the soil and thus can seep back into ground water in areas that have no sewage treatment. One such location, New York's Suffolk County, has banned the sale of all detergents because detergent compounds were accumulating in cesspools and then draining into the drinking water supply.

It may sound like the situation is ecologically hopeless, but research is underway to find safe substitutes for the chemicals in question. In fact, changes are being made so rapidly that a listing of the phosphate content of detergents published in the September 1970 issue of CONSUMER REPORTS is already out-of-date. Fortunately, the changes are in favor of the environment — less phosphate, fewer enzymes, and cleaner water for everybody.

SUPER-SONIC BOOM

Protecting a home from airplane noise pollution adds about 20 per cent to the cost of a $25,000 to $30,000 house, according to a study sponsored by Los Angeles Department of Airports and Abatement Coordinating Committee. The test determined how much soundproofing was required on homes near airports to allow verbal communication inside. The test involved three stages of soundproofing, with only the second and third stages being considered adequate. Stage one modifications cost $3,410 per house; stage two cost $5,260; stage three cost $10,441.

YOUR TUNA FISH SANDWICH IS TRYING TO TELL YOU SOMETHING. ARE YOU LISTENING?

Conservation News

In Defense of Pesticides?

EDITOR'S NOTE — When an editor starts tossing around a hot coal like "the environment," he can expect to stir up a little controversy. In this particular case, his expectations were well rewarded.

At the Jan. 20, 1971, meeting of the Fish and Game Commission, Mr. Don Osburn made a rather lengthy, vehement objection to an article in the January/February 1971 issue of MONTANA OUTDOORS, entitled "Know Your Pesticides." At that meeting the commission invited Mr. Osburn to submit a written rebuttal to MONTANA OUTDOORS, specifically listing his arguments.

It should be noted that the following is an exception in the editorial policy of MONTANA OUTDOORS. In fact, it might be the first article of its kind among conservation publications.

The contents are completely the author's and do not in any way reflect the views or opinions of MONTANA OUTDOORS or the Montana Fish and Game Department. The article is reproduced exactly as it was submitted by the author.

It is hoped that the open-minded policy of MONTANA OUTDOORS will be evident to our readers. You will have to judge for yourselves the merit of Mr. Osburn's "other side of the coin" article.

Let's stop biting the hand that feeds us.

by Don I. Osburn

I claim no expertise in the field of writing feature magazine articles. In fact, my lack of it is perhaps only exceeded by my lack of first-hand knowledge concerning the back side of the moon. It wasn't my original intention to write this article at all. However, I became so disturbed at the biased, slanted, outright propaganda piece entitled "Know Your Pesticides," which appeared in the January-February issue of MONTANA OUTDOORS, that I attended the Jan. 20, 1971, commission meeting just to protest its presence in the magazine at all.

I contended then, and still feel, that a publication of this type should treat controversial matters in a strictly neutral and objective manner. Since the article HAD appeared, however, both Mr. McCaffery and Mr. King suggested that I write a rebuttal, giving you readers an opportunity to see that there really IS another side to the picture, and that, just possibly, pesticides are not the devil's advocate they are so often depicted to be. This then, will be the position of the professionals in the pesticide argument, as opposed to that of the amateurs who largely man the ramparts for the anti-pesticide group.

The professionals in this case, are the entomologists, the structural pest control men, the contract applicators, and to a lesser degree the toxicologists and the biologists. To us has fallen the obligation of protecting the world's food supply and of attempting to keep it adequate to feed the burgeoning population. We and we alone, it seems, realize just how close a margin exists between an adequate and nourishing amount of food for all, and complete and total famine.

In America we have become conditioned to thinking of food surpluses, but this is a thing of the past. We no longer have such things. In fact, one prominent authority, Dr. Paul Ehrlich, asserts that during the current decade millions of persons

EDITOR'S NOTE—Donald I. Osburn briefly studied engineering at the University of Washington, Seattle, in 1928, but was forced to terminate his studies during the depression. He received his initial experience in pest control and pesticides in the U. S. Navy in 1943 and 1944. Since the war Osburn, 62, has owned and operated the Osburn Kemical Co. and Pest Control Service in Great Falls. He has taken short courses and extension work from both Oregon State University, Corvallis, (1954) and Purdue University, Lafayette, Ind., (1960, 1961). He is a staunch defender of the "continued but proper" use of pesticides.

will starve. ACTUALLY STARVE. And this assessment was made on the basis of full food production. Just how Dr. Ehrlich would extrapolate the number who would starve in case food production fell at least 30 per cent (the projected amount if we suddenly stop using pesticides), I have no idea; but it should be fairly obvious that civilization as we have come to know it would be gravely threatened.

I'd like to return to the very erudite Dr. Ehrlich a little later; but first let's take a considered look at the gloomy predictions which surround us on all sides. We are currently threatened with four possible avenues of extinction, each of which has a number of converts or adherents. They rank as follows:

I. The atomizers: These are the people who became convinced after World War II (and still are) that sooner or later we will be incinerated by a huge atomic holocaust. They could be right too — unless one of the other possibilities gets us first.

2. The insecticide poisoning group: This is the originally small (but rapidly growing) and very vociferous group which sprang into being after publication of Rachel Carson's controversial, biased, poorly founded and anti - intellectual **Silent Spring.** These people, whom I shall refer to as "Carsonites," are quite positive that we are all slowly dying of pesticide poisoning.

3. My personal hangup — and I too have many adherents — is that we shall all drown in our own sewage within the next 40 or 50 years, symbolically speaking.

4. Last, but by no means least, are the people who follow the theory of the aforementioned Dr. Ehrlich, author of **The Population Bomb,** who prophesies that we are about to breed ourselves to death.

It appears quite likely that if we are doomed to die anyway — and if we have our druthers — we will overwhelmingly choose Dr. Ehrlich's hypothesis as being the most pleasant way to expire.

Since Dr. Ehrlich's theories have become so well known, I am sure many of you have read his book, which is well thought out, well documented and well written. If you believe him, as I tend to, it becomes quite frightening. Dr. Ehrlich, of course, is somewhat of a Carsonite, as he reveals toward end of his work; but interestingly enough to me is that his principal thing against DDT (and remember that his hangup is anybody being born at all) is that 25 million persons are alive and breeding today, who otherwise would have died from malaria had it not been for DDT. The World Health Organization confirms this fact, of course. More than 25 million lives have been saved by DDT — far more than by penicillin. And, at the other end of the scale, far more persons have been killed through aspirin poisoning than by DDT. In fact, NOBODY has been killed by DDT!

Obviously that old Dichloro-Diphthenol-Trichloroethane is a very nasty chemical indeed. Now we have an additional complication, one which the Carsonites never mention — and seemingly hope that the average person never learns about. This one has just recently come to light.

The method by which tissues of all kinds are tested for retention of pesticides is known as the gas-chromatograph method. Ever since its development, we have been receiving reports of the presence of this pesticide or that (usually DDT) in the tissues of fish from the Arctic, penquins from the Antarctic, mangoes from the tropics. You name it — we got it. Many of these tests have been conducted and the results correlated by the Wisconsin Alumni Research Foundation Laboratories. They have done considerable contract work for different agencies, as well as their own testing. It must have been with some surprise that Francis Coon, laboratory chief of the testing division, recently discovered that a non-pesticide called TCB gave an almost identical reading on the gas-chromatograph as does DDT.

What does this mean? Simply that the total of all such tests made previously, tests which showed varying amounts of DDT impregnated in various and sundry tissues, has been thrown into doubt. It would be obviously impossible to go back and retest all those long-ago destroyed samples, so all the long-accumulated data is worthless. No one will ever know how many times DDT took a bum rap for TCB, which is quite common in the environment.

What then is it all about? What causes this weeping, this wailing, this gnashing of teeth on the part of the Carsonites, this complete dedication to the utter elimination of all pesticide use, this assurance by a never ending string of non-experts that unless we immediately end all pesticide use we will all die horrible deaths, go blind, produce mutations or otherwise come to no good ends? One might well ask, because it is the most interesting and ridiculous phenomenon of our times. I believe that the reason lies in the failure of our own people, our most prominent professionals and experts, to take the matter seriously enough in the beginning. Instead, they ignored the early unfounded claims against pesticides, believing that if they ignored the matter long enough, it would probably go away; and thinking, reasonably enough, that the general public had more sense than to believe some of the

fantastic assertions being made against mankind's most beneficial compounds — the pesticides. Had they jumped right on top of Rachel Carson's book immediately, expending the necessary time and energy to thoroughly disprove some of her most damning anti-pesticide statements by complete laboratory analysis, they could no doubt have prevented, to a large extent, some of the more ridiculous attacks which have followed, and which are often quoted as established fact by unknowledgeable zealots in their daily conversations.

These attacks, based on false conclusions, assumptions, guesses or plain vindictiveness, are heard every day and are often presented with no regard for scientifically researched facts at all — yet they are loudly and vociferously presented as fact by some of the Carsonites whenever they can corner an audience. It all reminds me somewhat of the food chain theory, which they so loudly propound. You've all heard that one enough times to know the theory by heart: a tiny animal of some sort picks up some DDT in his system, then he and some of his fellows are eaten by a larger animal, which in turn is consumed by a larger predator, which then also becomes prey for something else. Each time, of course, the pesticide is greatly amplified until we reach the top of the food chain and find that the last animal in line consumes almost solid DDT. What ROT! This has been completely studied objectively by competent scientists and for the most part thoroughly disproven.

Meanwhile, what about the comparison we started to draw between the food chain theory and the anti-pesticide propaganda? It goes about like this: some person, in an effort to prove a point, stretches the truth just a tiny bit, or maybe even tells a little white lie. The next one comes along and amplifies it. So does the next. Then some feature article writer builds it up still more in another anti-pesticide article; and WHAMO, you've got incontrovertible proof that all pesticides should be eliminated before we destroy the world. It would all be funny, if it were not so seriously tragic! It is tragic because this sort of false evidence has gone so far that it could easily lead to the loss of the pesticides we MUST have if civilization is to endure —if we are to maintain reasonable levels of public health and an adequate food supply, at least.

While at this point, let's consider the food chain theory—one of the criticisms most often leveled at pesticides—and how it actually shapes up scientifically. According to extensive tests made at Rutgers University, under the direction of R. H. White-Stevens, Ph.D., professor of biology, quote, "They have found that, indeed, certain aquatic flora and fauna do pool organochlorines, but that they do not consistently mount up the food chain. Furthermore, the actual evidence reveals that fish at the top of the food chain, e.g. trout, absorb 85 per cent of their accumulation of pesticides from the ambient water, and only 15 per cent from their food." Other scientists have also made extensive tests and tend to discredit the food chain theory completely; but does this stop the Carsonites from constantly trumpeting it to all who will listen as the ultimate truth? Not at all.

This seems to be one of the most interesting but exasperating facets of the phenomenon, because the pros—the scientists—no longer ignore the anti-pesticide zealots and their claims. We know that we are fighting for our lives (not to mention yours as well), and are constantly testing and evaluating every phase of the pesticide question. In doing so, we have discovered that almost every anti-pesticide claim is either false or a great exaggeration, and can be so demonstrated to any reasonable and open-minded person. However, we seem to make little impact. Disprove completely a Carsonite claim, and they will immediately make up two new ones to take its place. Not only that, they will continue to vociferously assert their superior knowledge concerning the original claim, no matter how great the evidence against their contentions—in spite of the fact, of course, that they are amateurs arrayed against professionals.

I started out, of course, to refute certain specific assertions made by Mr. Yeager in his pesticide article, and realize that I have only done so in a general way as yet. Even though this article may become a bit long, I must proceed to this refutation before winding things up, because I found some of his statements to be quite startling, to say the least. And when you startle these jaded old eyes with anti-pesticide claims, you have to be really deep in left field, because this old pro has seen some dandies over the years. Consequently, and as briefly as possible, I will enumerate some of the high spots of the misinformation contained in the January-February issue, offer the true facts concerning each claim and quote the proper scientific authority in all cases.

1. The general claim is made that pesticides kill fish. According to the latest figures available from the Federal Water Pollution Control Administration covering fish kills attributable to pollution of all kinds, pesticides are blamed for exactly three per cent—while municipal and industrial pollution killed nearly 80 per cent. This seems to indicate that the pesticide problem in our water is not too excessive, and that rather than sit around and howl about it, we should be looking very hard at municipalities and industry if we want to avert future kills.

2. The statement is also made that pesticides have killed birds of all kinds, predators, game birds, song birds, etc. Rachel Carson even claimed in her book that our robins were in grave danger of extinction from DDT use. What are the facts? Audubon Society bird counts for the year 1941 to 1960—the period during which the greatest and, no doubt, most careless use of pesticides was occurring—show that our robin population has increased 12-fold. Also, wrens, sparrows, starlings, quail, grackles and doves have multiplied their numbers greatly.

Much ado has been caused and great anguish expressed over the presumed fate of our osprey at Flathead Lake and the imminent disappearance of our other raptors such as the bald and golden eagle, not to mention the peregrine falcon, all of which presumably are perishing because pesticides in their systems cause their eggs either to be infertile or to have shells so thin that they break before hatching time. A terrible situation, if true—but is it? According to exhaustive laboratory tests made by Dr. White-Stevens, using out of necessity tame birds, it was found that even when they were injected with at least

Pesticides . . .

10 times the amount of DDT found in any wild species, there was no decrease in their fecundity or the usual thickness of their shells; all young hatched normally.

Each summer when I cruise around Flathead Lake in my boat, I observe that the usual nesting areas of the ospreys are occupied by fresh nesting pairs with their young; and during the fall of 1969, Glacier National Park had the greatest influx of bald eagles in its history, according to a feature article in the **Great Falls Tribune** and the Park Service records. When is this huge die-off of these birds supposed to take place, anyway? Peregrine falcons, of course, according to the Fish and Wildlife Service, have been decreasing in numbers since the turn of the century. They can't compete with the population and industrial growth, but this can hardly be blamed on pesticides.

3. I have never before heard ANYONE make such a wild guess as that DDT could become concentrated 100,000 times, climbing the food chain. As mentioned above, the whole food chain theory has been discredited.

4. It was inaccurate to state that pesticides can disappear from one area completely, only to show up somewhere else. The exact opposite has been substantiated by U.S. Forest Service tests conducted continuously for the past 22 years in Mississippi. It has been proven conclusively that even where annual rainfall exceeds 100 inches, pesticides introduced into soil plots have stayed exactly where placed.

5. The entire episode of the mother's milk scare was irresponsible and has been so proven by White-Stevens and T. H. Jukes (Ph.D., University of California) and others. Obviously, whatever a nursing mother consumes in any quantity will show up shortly in her mammary glands, including such items as alcohol, marijuana and nicotine (which is 200 times as poisonous to a baby as DDT would be, incidentally). Actually, it has been shown that infants are less susceptible to pesticides than adults, and the scientific community feels that the whole episode of the mother's milk scare was merely a propaganda ploy by the hard-core Carsonites, designed to obtain new converts.

6. The United States Public Health Service (USPHS) tells us that both mammals and birds have liver enzymes which break down and detoxify pesticides, and, as a result, that these animals are not subject to chronic poisoning from them (even IF they were starving). Fish do not have such protective enzymes in their livers, and so they ARE susceptible; but as previously noted, the mortality has not been excessive in their case. The rare cases of fatal pesticide poisoning in man have been of the acute type, and usually from the hotter phosphates such as TEPP and PARATHION, not the hydrocarbons. The Carsonites, incidentally, want us to drop the hydrocarbons and to use only the so-called "soft" pesticides, the phosphates. How wise does this sound?

7. It seems that Mr. Yeager wanted to create the impression that aerial application of Baytex for mosquito control presents a danger to all bird life in the treated area. This is definitely not true, even though Baytex in a much stronger concentration is used as a tool for nuisance bird control. The concentrations and applications are entirely different. Actually, the concentration used in plane spraying—.1 per cent in water—wouldn't kill a bird unless you were to drown him in it.

8. The World Health Organization, the U. S. PUBLIC HEALTH SERVICE and the AMERICAN MEDICAL ASSOCIATION, and every other scientific body which has investigated the claim of a connection between pesticides and cancer, emphatically state that no basis for such a suspicion exists. Just another Carsonite hob-goblin!

9. And finally, Mr. Yeager's assertion that everyone's tissue contain 12 parts per million (PPM) of DDT is undoubtedly the most ridiculous and irresponsible statement in the article. A lot of persons with more enthusiasm than knowledge have taken a shot at this figure, but this is the first time I've ever encountered such a wild toss! Since practically no one has ever had his tissues tested for this purpose, it has always been open season for such wild guesses. But there IS an official figure, given by the USPHS, of 7.4 PPM of TOTAL pesticide retention in the adipose, or fatty tissue. They arrive at the figure by a rather complicated formula, which includes the ASSUMED daily intake of pesticides, the ASSUMED retention by each person, etc.

No doubt the reason so few persons have taken action to discover just exactly what their own build-up of these pesticides might be, is that the testing can only be done at the few poison centers in the country. Here in Montana we have a choice of either Denver or Wenatchee. When I decided to have a test run on my own tummy fat, the doctor chose Wenatchee, snipped off about an ounce of tissue, and sent it in. I was somewhat apprehensive as to what the results of the test would be, because I have spent a quarter of a century in almost daily exposure to these pesticides—so I should have accumulated far more than any of the rest of you. Therefore, I was quite surprised, to say the least, when the report came back from Wenatchee. In spite of my long record of exposure, my total pesticide retention was only .36 PPM. That's just slightly over one-third of one PPM! Judging from that, I guess I can hardly be blamed for wondering if most people really have any pesticide retention at all. But if the thought really bugs you, have a competent surgeon slice off a sample and send it in for testing, by all means. It doesn't cost too much; and I really think that if more people took enough interest in the matter to do this, it would help substantially to allay some of the needless fears, distorted claims and unsubstantiated derogations about pesticides.

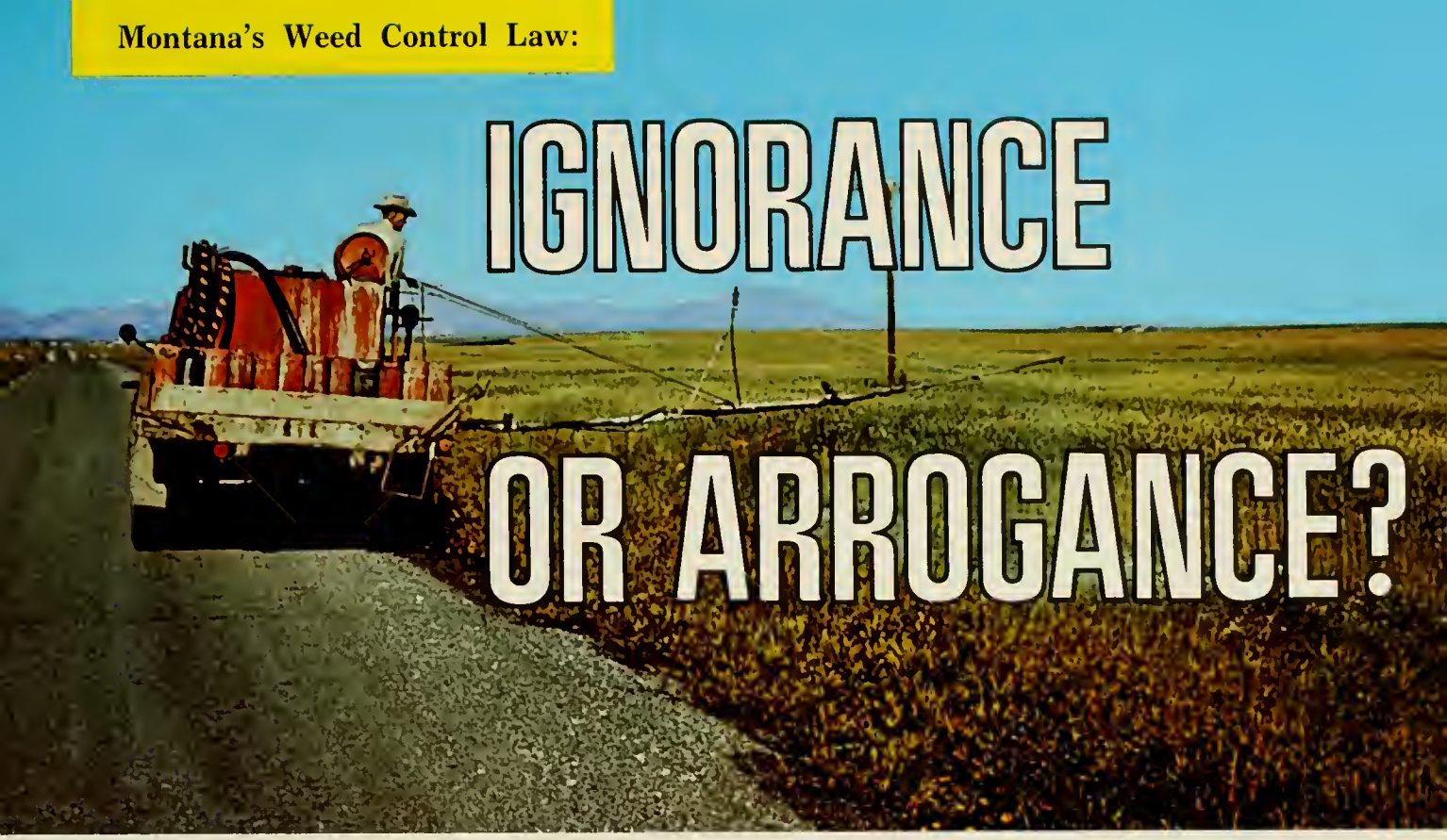
So, there we are—a slightly different tune, from the flip side of the record, presented by an old pro who has had it up to here with all the mish-mash of Carsonite gobbledegook presented daily to the public—filled up to the point where he just had to puncture a few balloons, when the opportunity was offered by Commissioner Joe McCaffery. The piece will not be dignified, of course, with a lot of fancy color photographs from the Fish & Game Department files. It is just, as Sgt. Friday used to say, "The facts, ma'am."

The writer naturally realizes the impossibility of hoping to change the attitude of the dyed-in-the-wool Carsonite who doesn't want to be bothered with facts, because his mind is made up, as the saying goes. There is always the hope, however, that the average John Q., who has been getting a steady diet of only one side of the story for years, might re-evaluate things in his own mind. To this individual I would say, DEMAND PROOF. Don't allow someone who is trying to convince you of anything to get away with the old saws such as, "Usually reliable sources state," or, "It has been learned from competent authority." Such claims should be treated for what they are worth—exactly nothing. When someone tells you a new horror story about pesticides, request the name and standing of the scientist who can substantiate it and ask to see the laboratory test results. You will find that in most cases the discussion will end right there.

In closing, if I may be permitted a bit of plagiarism, I would like to paraphrase a famous astronaut's question on a television ad: Pesticides? Who needs 'em? YOU DO! WE ALL DO!

Montana's Weed Control Law:

IGNORANCE OR ARROGANCE?



(F&G photo by Fred King)

by John Weigand

American society has steadfastly adhered to democratic principles and doctrines set forth almost 200 years ago in the United States Constitution. In addition, individual states have composed their own constitutions. Above all these human regulations, however, there exists a much higher order — our "Environmental Constitution." The ecological principles formulated in the last half-century express some of its provisions.

Man, a living part of this order, is often too close to "the trees" to recognize the ecological "forest." Aldo Leopold, one of America's early ecologists, effectively stated, "Thus men too wise to tolerate hasty tinkering with our political constitution accept without a qualm the most radical amendment to our biotic constitution."

Montana's Environmental Constitution has been radically amended with a Weed Control Law. With our growing fund of knowledge, however, such a mistake can now be corrected.

The 1939 Weed Control Law (revised several times) is based on a fundamental ignorance of recognized environmental principles. To understand the ecological irresponsibility incorporated in the law, a review of several of its provisions is in order.

"Noxious weeds" named under Montana law are Canadian thistle, wild morning glory, whitetop, leafy spurge and Russian knapweed. The law further states, "Such other weed or weeds as may be defined and designated as a noxious weed by the Board of County Commissioners of each county, is hereby declared a noxious weed and a common nuisance." **Thus the power to declare any plant in Montana a noxious weed subject to control programs has already been granted.**

The law further specifies that the County Commissioners shall appoint a County Weed Control Board of three members. There is only one qualification for this board: **each member must own agricultural land within his district. A considerable amount of power is thus vested in people who are not required to have any background or training in the field of plant ecology.** One could appropriately paraphrase Joyce Kilmer's poem— Only God can make a tree . . . and in Montana it can be declared a weed.

One section of the Weed Control Law forbids anyone to permit "noxious weeds" to go to seed. The provision encompasses all county, state and federally owned and controlled highways, state lands, all drainage and irrigation ditches, spoil banks, borrow pits and rights of way for canals and laterals within the district. It also includes national forests, national parks, national grazing lands and all state wildlife management areas. Each of these areas has prescribed responsibilities for the preservation of wildlife and accompanying recreational values. Wildlife inhabiting these areas is now, by Montana law, vulnerable to the land management wishes of agricultural interests.

How are the state-wide "weed" control programs to be executed? The Weed Law, Section 16-1718, states, "The supervisors shall have authority to purchase such chemical, material and equipment as they determine necessary for carrying on an effective control program." In short, anything that is needed for "weed" control is legal.

To understand the impact of Montana's Weed Law on Montana's Environmental Constitution, a number of ecological principles and concepts must be recognized. Living organisms (plants and animals) and their non-living components (minerals and water) are intricately interwoven to form complex, living communities. Organisms are directly affected by the abundance and distribution of nutrients, soil characteristics and the various climatic elements to which they are exposed. Plants and animals adapt to their environment or perish in it.

Man had little effect on his community as long as he harvested native vegetation and animals. Then he learned to reduce the risk of famine by cultivating certain crops. Advances in livestock husbandry, cultivation, medicine and transportation have steadily enlarged man's niche in the community, and the final result is his present highly technical, mechanized and affluent society.

Advancing agricultural technology has transformed vast acreages of formerly complex communities into simple communities. Ecologist Lee R. Dice pointed out that these simplified communities tend to be highly unstable. Some plants successfully invade simplified communities such as croplands. Since these plants compete with crops for available nutrients, moisture and sunlight, they are undesirable to the land manager and are termed "weeds." But are they really "weeds" in the broader, ecological aspect?

Studies conducted under the guidance of Montana State University have shown that many "weeds" (particularly forbs and woody plants) supply food and cover necessary for the existence of many of Montana's game animals. Field studies have produced the following observations:

- *Elk in Missouri River Breaks: forbs — 75 per cent of total summer diet.*
- *Elk in Sun River area: forbs — 13 per cent of winter diet; woody plants — 12 per cent, 9 species utilized.*
- *Mule deer in Little Belt Mountains: forbs — 50 species utilized, comprised 20 per cent of winter diet; woody plants — 31 species utilized, 78 per cent of winter diet.*
- *Whitetailed deer in Missouri River Breaks: forbs — 28 species utilized; woody plants — 19 species. Forbs and woody plants made up 94 per cent of whitetail diet in summer, fall and winter.*
- *Whitetails in Snowy Mountains: forbs — 46 per cent of year-round diet; woody plants — 41 to 54 per cent.*
- *Moose in Gravelly Mountains: forbs — 9 species utilized, comprised up to 9 per cent of fall and winter diet and 70 per cent of summer diet; woody plants — 15 species utilized, comprised 91 to 100 per cent of fall and winter diet.*
- *Mountain sheep in Sun River area: forbs — 10 species utilized; woody plants—16 species utilized.*

The importance of sagebrush and sagebrush communities to sage grouse, antelope and other wildlife has already been discussed in MONTANA OUTDOORS (see March/April, 1971, pp. 2-7). Removal of these communities could seriously deplete those wildlife species dependent upon them.

Studies of the ring-necked pheasant and Hungarian partridge show that they require undisturbed vegetative

Many Montana deer herds depend on browse species for their winter livelihood. Under present law these species can be declared noxious weeds. Since all noxious weed must be eliminated, Montana's Weed Control Law has opened the gate to a reduction in deer populations. (F&G photo)

areas for nesting, roosting and escape from predators and bad weather. Pheasants and partridge utilize waste grain and "weed" seeds for food. In the Yellowstone and Bighorn River valleys, pheasants under study consumed seeds of 77 "weed" species. Some of these were ragweed, pigweed, wild oat, thistle, fanweed and bristle grass. These cover and food requirements are satisfied in croplands, borrow pits, along irrigation ditches and stream courses, field edges, shelterbelts and in many agriculturally idle areas. In most cases, these areas are the targets for mechanical or chemical weed control.

Pheasant numbers have already declined noticeably in many of Montana's irrigation projects, primarily as a result of intensive agricultural practices. Further intensification, including removal of remaining idle areas, may cause even further decreases.

Obviously the use of the term "weed" depends solely on the individual or group of individuals viewing a particular plant. Once a plant is labeled "noxious," Montana

MONTANA FISH AND GAME COMMISSION
Policy on Pesticides
May, 1964

In considering all the disturbing facets involved in massive spraying or dusting of pesticides, the Fish and Game Commission has adopted the following policy — To:

1. Oppose mass aerial spraying of public lands in Montana with any of the chlorinated hydrocarbon chemicals.
2. Protest the mass aerial application of other pesticides, including herbicides, on public lands in Montana until the users conduct intensive studies on limited areas to determine the chemicals' effectiveness in controlling the target organisms and also the effect on other fauna and flora and to inform the public of their findings.
3. Request that federal agencies re-evaluate their policies and concept of multiple-use of public lands in relation to mass use of pesticides, especially weedicides (herbicides).
4. Make information relative to the use and total effects of pesticides, including herbicides, available to the public.

law states that it is "a common nuisance." Is it a nuisance to the elk, deer, antelope, sage grouse or pheasant? Is it a nuisance to the farmer, rancher, sportsman or traveler who enjoys seeing the game whose existence depends on vegetation?

Montana's Weed Law was designed purely from an agricultural (but not necessarily the farmer's) viewpoint. Many game animals, native and introduced, are in jeopardy if this is the only viewpoint considered.

The fact that certain plants present economic problems to Montana farmers is not disputed. It is equally recognized that agricultural practices, including importation of seed and livestock feed, transportation of farm equipment from one area to another, and deterioration of native rangeland by overgrazing, initiated the establishment and encourages the growth of these problem plants.

How is the problem to be solved? The first step is to recognize and utilize the ecological principles governing the land. Ecologist Eugene P. Odum has stated: "The most pleasant and certainly safest landscape to live in is the one containing a variety of crops, forests, lakes, streams, roadsides, marches, seashores and waste places—in other words, a mixture of communities of different ecological ages." Montana has been blessed with all but the seashores.

To date, agricultural advisors have been over-concerned with the immediate income return per land unit without considering the consequences of simplifying natural diversity. Achieving Dr. Odum's proposed balance involves returning diversity to Montana's agricultural areas. Vast acreages in one or two cash grain crops is a sure way to precipitate an agricultural catastrophe. One such near-catastrophe was the corn blight outbreak in the midwestern United States in 1970. A near miss occurred in Montana's Grain Triangle (an area bounded by Cut Bank in the northwest, Havre in the northeast and Great Falls in the south) during 1969 when an outbreak of wheat streak mosaic started but then subsided naturally. A third example of monoculture failure is the progressive increase of alkali deposits in north central Montana croplands.

Further application of Dr. Odum's advice indicates that roadsides, marshes and waste area communities should be viewed and managed as valuable components of our ecosystem. Attention to these areas in Montana has often been focused on their mismanagement or removal.

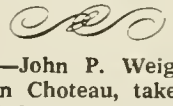
Prevention is recognized as the cheapest means of weed control, yet it has not been very successful. Four of the five defined "noxious weeds" (wild morning glory excepted) are not native to Montana. Further, our laws permit nine seeds of noxious weeds per pound of seed to be imported into Montana. Nebraska and Wyoming prohibit primary noxious weed seed in their importations. Weed seeds may also be imported via unclean farm machinery, contaminated hay and within the digestive tracts of livestock. It appears that more care is necessary to prevent further importation of potentially undesirable vegetation.

Agricultural advisors recognize that mechanical methods (cultivation) will control, or even eliminate, the five noxious "weeds." However, on rangelands the removal of native vegetation may encourage establishment of undesirable vegetation.

Biological control includes improvement of crop strains and the use of diseases, disease vectors and insects to control undesirable vegetation. Biological control methods could include the use of livestock in a carefully planned system of grazing whereby the needs of native plants are recognized and provided for naturally. Such a system incorporates the periodic resting of ranges from grazing so that native vegetation may replenish and re-seed itself.

Chemical control of noxious weeds should be considered as a last resort, not a primary tool! Total dependence of any "weed control" program on chemicals is based on fallacy. Herbicides seldom eradicate or eliminate specific plants. The fact that chemical application is needed year after year challenges the belief that it permanently controls vegetation. The soil already contains countless seeds of native and introduced plants. Given the proper site, nutrients, moisture and light conditions, a plant may flourish one year and subside the next — naturally.

Few herbicides are species-specific in nature; that is,



EDITOR'S NOTE—John P. Weigand, 34, Game Research Biologist in Choteau, takes a special interest in upland game birds. He is currently researching the "Ecology of the Hungarian Partridge in North Central Montana." His background includes a Bachelor of Science degree in biology with a minor in conservation, obtained in 1958 from Wisconsin State University, Stevens Point, and a Master of Science degree in wildlife management, obtained in 1960 at Michigan State University, East Lansing. He has been a game management biologist in Montana and a district game manager in Nebraska.

Abandoned farms such as this one provide excellent habitat for pheasants, Hungarian partridges and other wildlife. If the "weeds" are sprayed, they can provide nothing for wildlife. (F&G photo by John Weigand) The Hungarian partridge. (F&G photo by Roger Fliger)

their killing powers are not limited to one species. Their application can result in the reduction of plants which are of little consequence to the farmer and which may actually have wild community values. Wide-range herbicides may kill plants which nature has provided to "heal" some of the land abuse inflicted by overgrazing. Nature abhors a vacuum and will attempt to provide plants to reclaim overgrazed ranges. These plants are a symptom to the land manager that his land is sick. If he does not recognize this warning, he may continue to permit overgrazing and these plants will become more numerous. Chemical removal of nature's last effort to maintain plant cover in the community may lead to soil erosion and ultimate loss to the land manager.

The most common herbicides used for "control" of Montana's "weeds" have been 2,4-D and 2,4,5-T. In recent experiments (Cope, Wood and Wallen, 1970), one-fifth of a bluegill population died within eight days of exposure to 2,4-D. Spawning delays up to two weeks after 2,4-D exposure were noted. Total loss of fingerling bluegills exposed to 2,4-D was also observed.

Application of 2,4-D has also been associated with widespread outbreaks of aphids. The herbicide reduces the population of the aphid's predator, the ladybird beetle. The aphids may then be treated with insecticides that are harmful to wildlife.

2,4,5-T is used for killing woody plants that provide food and shelter for big game and game birds. Recent studies by the U.S. Food and Drug Administration, Dow Chemical Company and the National Institute of Environmental Health Services confirmed that impurities (dioxins) in 2,4-D and 2,4,5-T are teratogenic (capable of producing birth defects). Congenital defects in unborn animals consisted of missing or abnormally small eyes, absence of the lower jaw, cleft palate, missing limbs, skull and other skeletal defects. Increased incidence of fetal mortality was also attributed to these impurities.

Use of 2,4,5-T has been banned on lands managed by the U. S. Department of the Interior and the Montana Fish and Game Department. Recommendations from the National Advisory Panel on Teratogenicity of Pesticides included:

> *The use of currently registered pesticides to which humans are exposed and which are found to be teratogenic by suitable test procedures in one or more mammalian species should be immediately restricted to prevent risk of human exposure. Such pesticides, in current use, include Captan; Carbaryl; the butyl, isopropyl, and isooctyl esters of 2,4-D; Folpet; mercurials; PCNB; and 2,4,5-T. The teratogenicity of 2,4-D, and other salts and esters of both 2,4-D and 2,4,5-T, and that of IPC, should be investigated further.*

As a result of these recommendations, the Montana Fish and Game Department is watching closely for any

further rulings regarding restrictions on use of 2,4-D and other pesticides. In the meantime, private land managers may still apply 2,4-D, 2,4,5-T and other potential environmental contaminants. They may even obtain financial assistance to do so through the U. S. Department of Agriculture.

Herbicides which are known to have toxic effects on wildlife include:

aromatic solvents (naphthas): toxic to waterfowl and fish

chlorinated benzenes: toxic to fish, long-lived chemically

dinitro compounds: highly toxic to warm-blooded animals and fish

endothal: highly toxic to mammals

sodium arsenite: highly toxic to warm-blooded animals

The effects of many herbicides on wildlife are still unstudied. When directions for application include precautions regarding delayed crop growing, prohibition of grazing by domestic livestock or avoidance of chemical residues in grain or meat, the effects on wildlife (which cannot be excluded from using treated land) become highly suspect.

Methods of controlling roadside vegetation should be carefully scrutinized. Less control would be needed if road grading was limited to the traveled portions of the road, thus avoiding the disturbance of borrow pit surface that encourages noxious weed growth. In addition, the establishment of perennial grasses or maintenance of natural roadside communities could reduce noxious weeds.

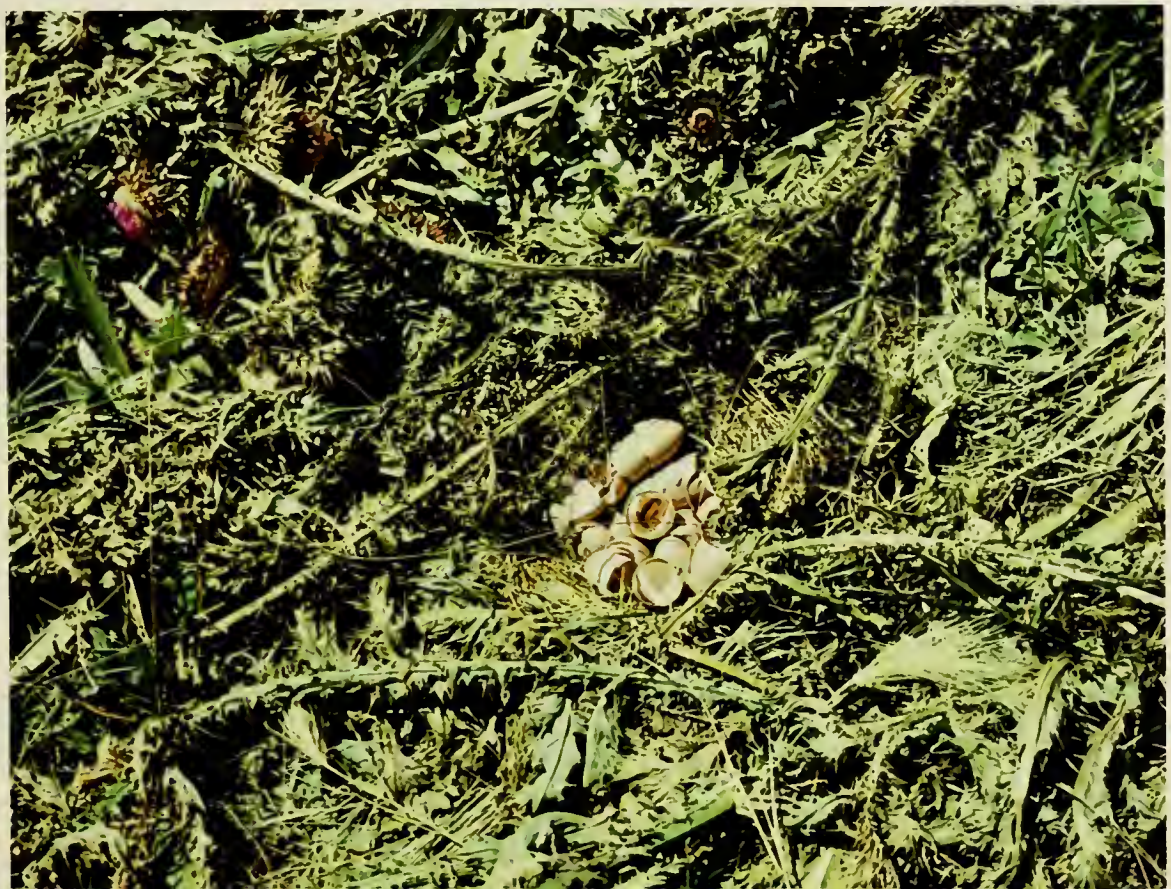
Broadcast spraying of the chemical contaminants upsets nature's balance in roadside communities and may actually promote encroachment by undesirable plants. Chemical treatments of such areas should be limited to trouble spots of defined "noxious weeds." Mowing of roadside vegetation to prevent snow accumulation should be delayed until late July or August. If mowing were conducted just prior to seed-bearing stages of "defined noxious weeds," the duplication of chemical control (and accompanying expenditure of tax money) could be prevented.

Intensive grazing of native and irrigated rangelands is an open door for undesirable plant establishment. Grazing of ranges should be within the limits of good range management with the long-term goal of ecological advancement (succession). Disturbance of soil and vegetation along stream courses and irrigation ditches should be kept to an absolute minimum. Maintaining a stable grass-forb-shrub community along these areas should decrease the growth of undesirable plants, thus reducing the chance that seeds will be transported via waterways.

Ecological ignorance is no longer an excuse for violating Montana's Environmental Constitution. Montana's Weed Law should be replaced with legislation designed to recognize ecological principles in addition to agricultural interests. The Environmental Pollution Panel of the President's Science Advisory Committee offers guidelines to accomplish this, stating that control methods employing a single-minded approach must be replaced with a "more sophisticated approach based on principles of applied ecology." These methods include integrated pest control: "An ecological approach to pest management in which all available necessary techniques are consolidated into a unified program so that populations can be managed in such a manner that economic damage is avoided and adverse side effects are minimized."

In May, 1964, the Montana Fish and Game Commission established a policy on pesticides, including herbicides (see page 33). Cooperation among department biologists, agricultural advisors, representatives of the medical profession, and all Montanans is requisite to solving these problems. **Avoidance of this issue or failure to establish ecologically sound answers to Montana's weed problems would be ecological arrogance—and this type of crime against our Environmental Constitution is unpardonable.**

By knowing the time of year that thistle goes to seed and the hatching time of certain game birds, this landowner was able to remove the thistles and still give life to 17 Hungarian partridges. (F&G photo by John Weigand)



YOUR MONEY, YOUR DEPARTMENT

by Bob Carroll

Most state agencies use tax dollars for their operation. However, your Fish and Game Department, with a single, relatively small exception in the Recreation and Parks Division, *operates without Montana general fund tax dollars.*

The sportsman provides the entire financial base for the department. By paying hunting and fishing license fees, he provides revenue that is used for game and fisheries management, environmental resource work, information and education and law enforcement.

EDITOR'S NOTE—Bob Carroll, 39, is Project Leader of the Information and Education Division Film Center in Helena. He received a Bachelor of Science degree in film and television in 1958 and a Master of Science degree in drama in 1959 from Montana State University, Bozeman. He also attended the Massachusetts Institute of Technology, Cambridge, Carroll College, Helena, and the University of Montana, Missoula. Veteran of Air Force and Army, he served as Production Director for Montana's XL TV-Radio Network and Program Director at KBLL-TV, Helena, winning many TV programming and production awards.

Part of this money is also used to match available federal monies, which furnish a considerable amount of the revenue that supports Montana's wildlife resources. This federal money also comes from the sportsman, through a different route than license money — the payment of federal excise tax on the sale of guns, ammunition and fishing tackle.

This excise tax revenue is earmarked for return to the states as matching money for wildlife research and land acquisition and cannot be used for anything else, for instance law enforcement. No state can receive this matching money unless it guarantees that its license money will be used only for wildlife management purposes. In normal practice one Montana dollar is matched by three federal dollars.

The federal excise tax on pistols and revolvers formerly went into the U.S. general fund, but a new law now earmarks it for wildlife restoration on a matching basis. This new law also provides federal matching aid for hunter safety programs and even for the construction of firing ranges for firearms and archery.

The reason both license money and federal excise tax money is earmarked solely for fish and game use is that all over the United States sportsmen insisted their money be handled strictly to benefit fish and game.

Within the entire operation of the Fish and Game Department, the only use of Montana general fund money is for the maintenance of state parks, such as Lewis and Clark Caverns. *During the 1969-71 biennium, this made up only 2.2 per cent of the department's overall budget.* Other sources of money for fish and game programs are the motor boat fuel tax and federal Bureau of Outdoor Recreation funds, again with a state-federal matching fund program involved.

Except for the state parks budget, all the basic funding of the department's activities comes only from the people who make use of the resources for which the department is responsible. Anyone not wanting to hunt, fish or run motorboats and the like doesn't contribute a nickel for the benefit of those who do. In contrast, the clean water and quality wildlife habitat resulting from the sportsmen's financial support benefits everyone every day. This is the backbone of the department's motto: **A livable environment for wildlife is a quality environment for man.**

When you think that more and better services from state agencies means more taxes, remember that your Fish and Game Department isn't a member of the General Fund Tax Money Club.

ABOUT SPRING

If we were to conduct a poll among those who enjoy the outdoors and ask this question — What is your favorite season? — spring would win hands down.

This season means many things to many people, but most of all it means the end of the boob tube's winter attraction. It means fishermen begin tying flies and marking dates for the upcoming fishing season. Hikers start oiling boots and checking lightweight camping gear. Boaters start shipshaping the family craft. Bird-watchers begin scanning trees for the first sign of the sure-to-come influx of winged things. Rockhounds, sightseers, climbers, shutterbugs, spelunkers, picnickers and all the rest begin counting the days until their first excursion.

And then there's a dedicated bunch known as snowmobilers, skiers, ice fishermen and snowshoers — what about them? We can only suggest that they view spring as the off-season and that they take up a lesser form of outdoor recreation until their time arrives. Who knows — they might change their minds as to their favorite season.

But what about the hunter? Can he only look forward to long months of waiting until most hunting seasons open? What is spring to him besides a rest period between hunting seasons?

Contrary to this thinking, spring is the most important season for the hunter. This is when Nature restocks her game basket and leaves a surplus for next fall's hunting season.

Outdoors people, photographers and just plain 'lookers,' as well as hunters, should enjoy spring as the time when bear cubs see their first light, when fawns, lambs and calves struggle onto a set of wobbly legs and seek their first meal, and when eggs crack to expose down-covered ducklings, chicks and goslings. Losses suffered in last year's hunting season and during the long winter are being replenished and then some.

The young thrive throughout Nature's growing season and almost reach adult size by the time leaves begin covering the ground. Next fall will bring rifles, bows and scatterguns into the fields and marshes. A calculated percentage of the game population will be removed, leaving numbers in relation to the available habitat and food supply. This is Nature's way—overstocking and harvesting.

It makes no difference what your favorite form of outdoor recreation may be, get out and enjoy what Montana has to offer you. Do it this spring.

Frank H. Dunkle

FRANK H. DUNKLE

A LIVABLE ENVIRONMENT FOR WILDLIFE IS A QUALITY ENVIRONMENT FOR MAN

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THE WESTSLOPE CUTTHROAT

In its last listing, the Bureau of Sport Fisheries and Wildlife classified the Montana westslope cutthroat trout (Salmo clarki) as endangered. This means that unless some immediate action is taken, the species could join a growing list of extinct wildlife. In this case, immediate action should be the protection of the westslope's natural habitat, the prevention of further introduction of exotics into waters where the westslope is the dominant species and extensive research to solve management problems.

If the westslope becomes extinct, Montana will have lost one of its few native game fish as well as a truly unique wildlife species.